

American Artisan

THE WARM AIR HEATING
AND SHEET METAL JOURNAL
FOUNDED 1880



The twin towers of the new Waldorf-Astoria Hotel will shortly be another landmark on New York's ever changing skyline. These two towers are sheathed in copper. Details of the project are in this issue

JULY 6, 1931

Rehabilitating *a World's Fair building with* **Revere Sheet Copper**



PRIDE of Chicago's World's Fair of 1893 was the Columbian Fine Arts Building. For years after, it stood, a heritage of the Fair, housing the Field Columbian Museum.

Now, this vast and stately building in the Grecian-Ionic style is to enter a new era of glory. It is to be completely rehabilitated and will become the home of the Museum of Science and Industry.

The work of rehabilitation is going forward under the direction of Graham, Anderson, Probst and White, Architects.

In this great work, over 200,000 pounds of Revere Sheet Copper will be used . . . in roofing, flashings, skylights, stampings. Kitzelman

& Co. of Chicago are the sheet metal contractors.

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For over 130 years Revere Sheet Copper has gone into America's great building projects . . . Boston State House, National Capitol at Washington, in many of the buildings in the Grand Central Terminal Zone of New York City, and now the Fine Arts Building.

Such is the prestige of Revere Sheet Copper . . . a prestige founded on quality . . . on performance.

Isn't it good judgment then, to build your business on the established Revere prestige and Revere quality? For further information, address Revere Copper and Brass Incorporated, 230 Park Avenue, New York City.

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July 6.

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True & Talks

with successful sheet metal men

SERIES No. 1

NUMBER 4

FIRST MONEL METAL JOB...

"ALWAYS SELLS MORE"... Chas. B. Rundell

37-year-old Indiana firm has installed a wide variety of Monel Metal equipment without a single comeback

After 37 years in the sheet metal business, Chas. B. Rundell of Ft. Wayne, Ind., has reason to know metals and what they're good for. So when he says that he believes Monel Metal holds unlimited future possibilities for sheet metal contractors, you can be sure he knows.

All right—let's listen. Here's his story in his own words:

"I employ only sheet metal mechanics and it is a pleasure for my men to work with Monel Metal. It gives them a chance to show their real ability, for Monel Metal

jobs are outstandingly distinctive.

"It has been our policy for 37 years to give our customers the most up-to-date equipment, and to keep ourselves abreast of the latest developments in metal-work. Constant observation of the trend in new metals confirms

our belief that the future possibilities of Monel Metal are unlimited.

"We have supplied homes, hospitals, laboratories, textile mills, ice cream factories, hotels, restaurants and other institutions with Monel Metal equipment

and we still have to find the first job that has not given entire satisfaction. Moreover, we consider every Monel Metal job we install a permanent advertisement. Your first

Monel Metal job always sells more."

Mr. Rundell is not alone in his enthusiasm for Monel Metal. He has plenty of good company among scores of progressive sheet metal contractors who are turning Monel Metal's remarkable properties and wide adaptability into cold cash. These fabricators report that Monel Metal's modern beauty, rust-immunity, corrosion-resistance, ready cleanability and steel-like strength and durability make a combination that helps them land job after job in the face of stiffest competition!

Write for pamphlet "Good Business Waiting To Be Found."



View of Monel Metal equipment in ice cream plant of Schlosser Bros., Ft. Wayne, Ind. In this modern, spotlessly clean creamery, Monel Metal is used for door and door frames, ice cream freezers, hoppers, chain guard, motor cover, pipe from upper floor and table drawers. All this Monel Metal work built by Chas. B. Rundell, Ft. Wayne.



The busy sheet metal shop of Chas. B. Rundell, Ft. Wayne, Ind. Mr. Rundell, in the foreground, has been in the sheet metal business in this location since 1893.

Monel Metal is a registered trade mark applied to a technically controlled nickel-copper alloy of high nickel content. Monel Metal is mined, smelted, refined, rolled and marketed solely by International Nickel.

A HIGH NICKEL ALLOY

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NICKEL ALLOYS PERFORM BETTER LONGER



THE INTERNATIONAL NICKEL COMPANY, INC., 67 WALL STREET, NEW YORK, N. Y.

INDEX PAGES—6 and 48

[VOL. 100, No. 14]

BUYERS' DIRECTORY—44 and 46

SAVE THIS PAGE

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Distinctive in design. Self Cleaning Radiator. No soot deposits. Out of the competitive class. Ideal for soft coal, oil burners, or stoker equipment because of high combustion chamber and design of castings. Sizes up to 33" firepot for large gravity or forced air work.

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For one room school houses. Most complete and best designed school heater on the market. See the trustees in your district. Get this business that is now going to specialty houses.

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WOOD BURNING FURNACES

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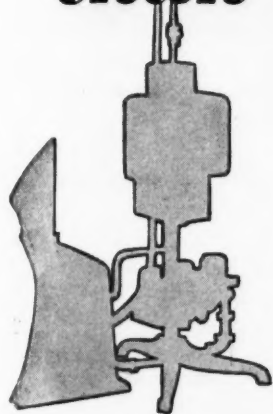
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than **WITHOUT** *it*



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Founded 1880

American Artisan

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AND SHEET METAL JOURNALCovering All Activities
INGravity Warm Air Heating
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Cornelius Clutts is possibly one of the country's leading furnace salesmen. He hasn't been in the game long, but his experiences have multiplied rapidly. If you don't believe he can sell furnaces read this installment and see for yourself. Perhaps you can use some of this brilliant salesman's ideas. Who knows?

* * *

If you want some proof that there has been a depression, just take our word for it. Probably the outstanding and almost the only architectural sheet metal job done in New York City this spring was the Waldorf-Astoria Hotel copper domes. The details are in this issue. We are hoping that New York will soon find itself so we can get some more stories.

* * *

Due to space limitations last issue we had to leave out such standbys as Voorhees, John, Jordan, Overton, etc. But we try to make up for it this time by publishing articles by most of these men. If possible we won't let the June 22 incident happen again.

VOL. 100, NO. 14

JULY 6, 1931

Contents

	Page
Your Cake Is Being Nibbled	9
<i>The editorial.</i>	
Copper Work on the Waldorf-Astoria Hotel, New York	10
<i>Details of the outstanding copper job of the spring building season in New York City. A large amount of copper was used to cover two domes and provide the ornamentation for these high towers.</i>	
So Sez Cornelius	14
<i>Some secret correspondence unearthed by an investigating committee looking into the nefarious practices of this warm air heating business. This salesman knows his onions.</i>	
A California Blow Pipe System	17
<i>A short article showing some details of what is probably the largest blow pipe system on the Pacific Coast.</i>	
Fan Blast Engineering	18
<i>Platte Overton continues his discussion of the fan blast system he has been explaining for us.</i>	
Fresh Air for Locker Rooms	20
<i>An explanation of a system for circulating the air inside locker rooms and for individual lockers also.</i>	
Applied Fan Fundamentals	22
<i>G. A. Voorhees continues his series on fans, this one dealing with the calculations necessary to establish the C.F.M. for any given room.</i>	
Give the Customer Plenty of Heat	24
<i>Banks and Coleman, Fort Wayne, Ind., heating contractors, have followed this rule for many years and they get praise and not complaint from their customers.</i>	
Electric Motors in Modern Heating	27
<i>The fourth article of the series by H. Weichsel. This article explains some of the different types of motors commonly used.</i>	
Ventilator and Pipe Capacities	29
<i>Paul R. Jordan answers the letter from a reader who wants to know what this capacity proposition is all about and why.</i>	
Association Activities	31
New Items and News Items	32

JOSEPH D. WILDER
Editor

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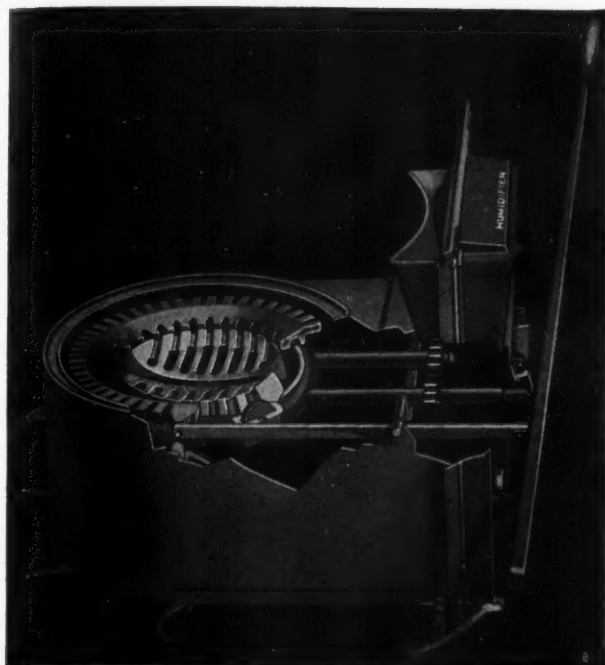
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Operating the regular shaking handle revolves the outside ring, and agitates the fire nearest the fire pot. A jolting action at the end of the stroke still further helps free this portion of the bed from ashes.

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NIAGARA
is easier to
SELL!

Easier Ash and Clinker Removal with the Niagara Duplex Grate

THE Niagara Duplex Grate makes it unusually easy to get *all* the ashes down into the ash pit. This 2-in-1 improvement combines the revolving action of the flat grate with the dumping advantage of the triangular type. The fire is "cleaned" quickly and thoroughly—and not "lost."

"Cracking" warm air heating problems has become a Niagara habit. Niagara engineering gives you *all* the advantages that the modern intelligent home owner demands; circulating, humidified, healthful, abundant heat; freedom from "dirt" and fumes; flexibility, ease of operation, fuel economy, saving of floor and wall space, better room and basement appearance.

It's because of such outstanding advantages as these that the Niagara Warm Air Furnace is so much easier to sell. The coupon will bring the details about still other points of Niagara superiority.

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WARM AIR FURNACE



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We carry a full stock of repair parts made from original patterns for Niagara and Monarch furnaces. We manufacture the well known Walworth Registers. Quotations upon request.



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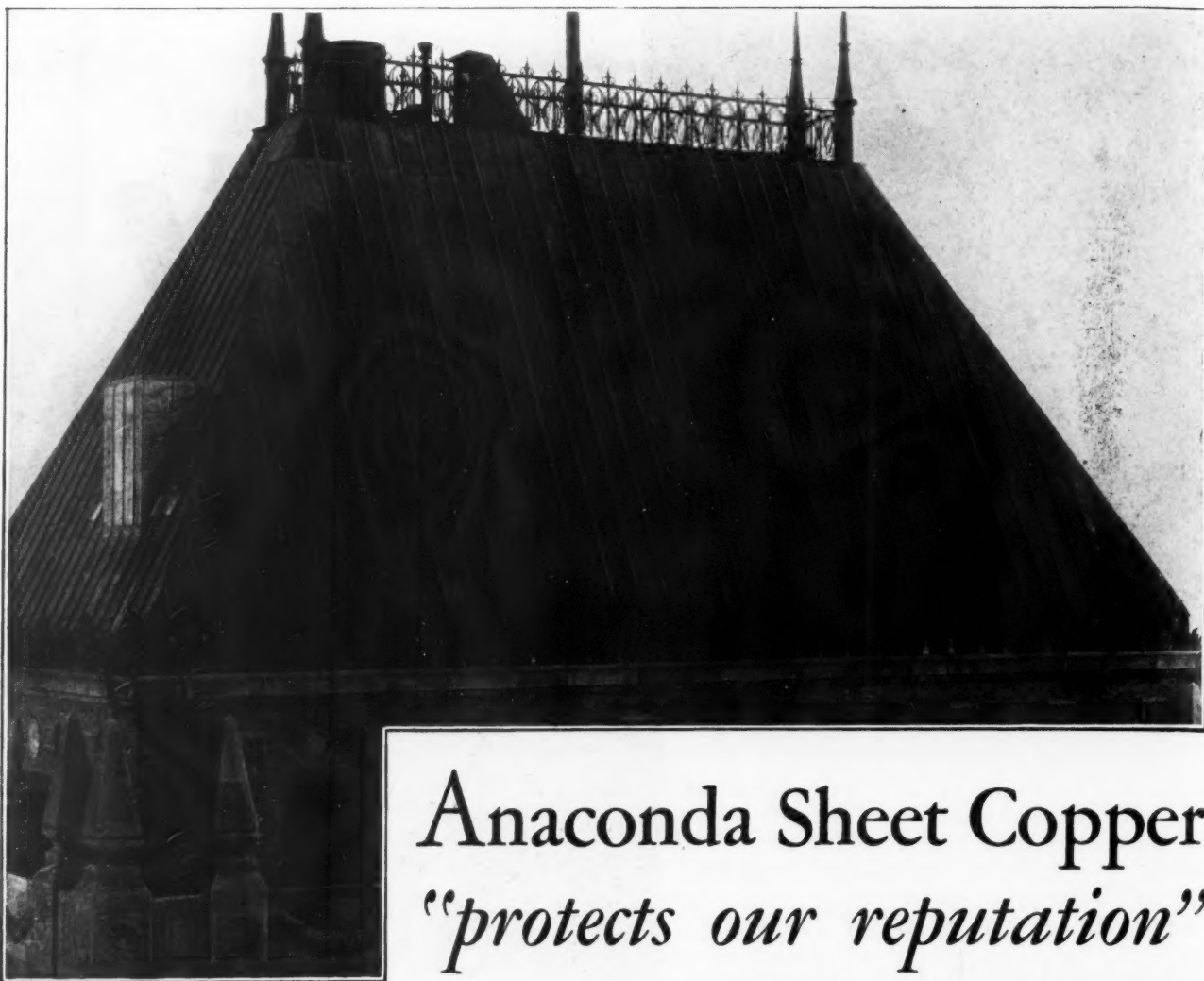


Photo above shows batten seam copper roof on the new twelve-million dollar, 35-story Newark & Essex Bank Building, Newark, N. J. Architects: John H. & Wilson C. Ely

Anaconda Sheet Copper *"protects our reputation"*

says: **FRANK A. GRACE**
OF HERRMANN AND GRACE
CONTRACTORS, NEW YORK CITY

"MR. GRACE, just why did you use Anaconda Copper on the roof of the Newark and Essex Bank Building?" we asked.

Here is the well-known contractor's reply: "For the same reason that we used it on the Woolworth Building, Singer Building, and other jobs where quality and dependability were essential.

"We've been in business since 1876 and we know from experience that the *uniform quality of Anaconda Copper protects our reputation* for high-class workmanship."

There you have it! Uniform quality—assured by Anaconda's control of materials from ore to finished product. It *does* protect a contractor's reputation for good craftsmanship. Let it protect *yours*.

Anaconda Copper . . . in sheets, rolls and Economy Strips . . . is supplied promptly by distributors in all leading cities. The American Brass Company, General Offices: Waterbury, Connecticut.



This trade-mark is stamped in Economy Strip Copper, a convenient product with parallel edges used for the manufacture of gutters and rain-pipes. Look for this identification.

ANACONDA COPPER

Say you saw it in *AMERICAN ARTISAN*—Thank you!

Your Cake Is Being Nibbled!

IN traveling around the country talking to heating contractors and viewing their latest jobs, we sometimes wonder if they realize what tremendous changes are just ahead of them. Many of our readers are, but many of them seem to be content to go along doing things in the same old way, talking about the same old things to customers, designing and installing as they always have.

Let us quote from the editorial of a leading business paper serving the plumbing and heating field. This editorial says in part—

"The forward-looking heating contractor will, by now, be giving some consideration to the effect of the growing interest in air conditioning in the home on the radiator business. We are, no doubt, moving toward a time when the individual residence owner will enjoy the comfort which will come from the application of controlled warmth and humidity to these smaller buildings. In just what way will the heating contractor, whose whole experience has been in the field of radiator heating, meet this change?

"The problem has two branches. First there is the home in which there is now a boiler. There will be a growing demand on the part of home owners for the kind of air conditioning they enjoy in their local theaters and hotel dining rooms. The other branch of the problem is—by far the greatest number of residential heating plants are of the warm air type. In the story in our last issue, a unit heater, furnished with steam from the district system, has been used. But what of the warm air plant where there is no district steam plant? Who is going to get that work—the sheet metal man who has specialized in warm air heating or the heating contractor whose knowledge lies in the steam, hot water and vapor field?

"One contractor says that if the latter [the steam and water contractor] does not get the necessary information he is going to find a lot of business slipping out of his hands. The observation seems to be a just one. Conditioned air, with the warmth and humidity controlled, is *at the least a combination sheet metal and piping job. Our heating contractor (steam and water) has the opportunity to handle this new business, if he prepares himself for it.*"

That statement clearly points out our future problem. An air conditioned job is a combined sheet metal

and piping job. But so, also, must the electrician and the plumber contribute work. Why not give the job to them also?

There seems to be little doubt but that this air conditioned home is going to draw envious eyes from all directions. Secretary of Commerce Lamont recently said, "The next big industrial field is going to be the field of air conditioning the American home."

Undoubtedly we have done a lot of talking and speculating about this air conditioning. The trouble is we haven't put enough effort behind our talk. Unquestionably it is easier to say we should sell air conditioning systems than to go out and actually *sell* them, but if we don't do the selling someone else will.

Not more than a month ago a wealthy man living in a suburb of Chicago wanted an air conditioning system in his new \$100,000 home. He got a theater engineering firm from Chicago to put it in because, "I never heard of any local heating man who did such work." Yet there are three good warm air heating men within ten minutes' drive.

He didn't know those contractors did that kind of work, *because those contractors had never thought it necessary to talk to that man or send him mailing matter, or solicitate him on the phone!*

If our contractors don't think enough of their future bread and butter to lay the foundation for it now, undoubtedly some other trade will step in and take the business away from us. They should, for business is not apportioned by grace of God, but by sales effort.

It is a big problem. It contains plenty of room for the combined brains and efforts and money of every person connected with warm air heating. Manufacturers can help by advertising their air conditioning equipment to the public. Certainly there is a large field for association effort.

But the bulk of the effort is going to come from the contractor. He it is who is going out and talk air conditioning. He it is who will use typical jobs to sell others. He it is who will have to advertise his ability and service and *sell* the equipment. He it is who is going to do the telephone solicitation, door to door canvassing, and direct mail work. And above all, *he* it is who is going to sell the idea to architects and do the installing.

SHEET COPPER ORNAMENTS

TWIN TOWERS OF WALDORF-ASTORIA

The Dignified New Structure of the Famous New York City Hotel Uses Forty Tons of Copper for Tower Sheathing and Unique Floor Protection

THERE will be opened to the traveling public of the world this fall, a new and greatly enlarged Waldorf-Astoria Hotel. To New Yorker's and visitors alike the hotel's opening will recall memories of days when the old Waldorf with its dining rooms and social events was one of the hubs around which New York City revolved.

The new hotel covers an entire block. Light and air are insured by the deep light courts which break the outside facings and by the setback type of architecture. Above the huge lower block of the building there is a magnificent tower rising high above the surrounding buildings. This main tower is ornamented by twin towers which house at their peak ornamental lanterns of huge dimensions.

It is on the domes of these towers that thousands of pounds of Revere copper and considerable aluminum were used as sheathing.

The new hotel is farther up town for on the site of the old hotel there now stands the world's tallest structure—the Empire State Building. Just as the old hotel was one of the finest buildings of its time, so the new hostelry will be one of the most magnificent buildings of the

world's second city. Throughout the new building no detail has been held too small to warrant the expenditure of sufficient time and thought to make that detail conform to the highest architectural and construction practices.

In keeping with this idea of per-

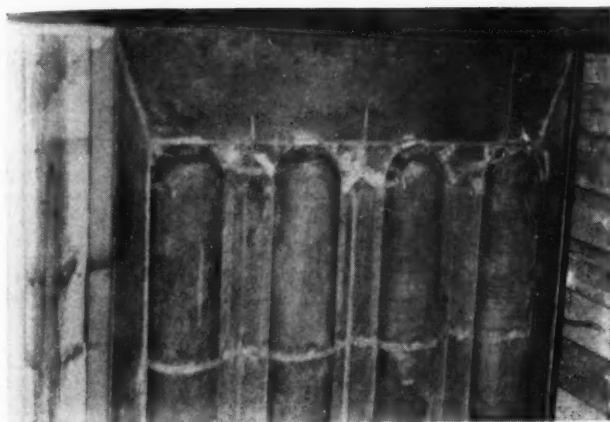


Above is a closeup of one of the wing tips, showing the formation of the copper sheets. The seams of the section are clearly indicated. The wood backup also shows. This is the topmost wing



Left is a view showing the copper sheathing on the slopes of the dome. The sections are all single locked, unsoldered. The moldings are all soldered to the slope copper

manence, beauty and service much thought was given to the finishing off of the twin towers which rise high above the lower levels and the tower of the building. Two requisites were demanded of the materials sheathing the towers—a permanence equal to the remainder of the exterior and a beauty conform-



Left is one of the special panels. These panels were all assembled in the shop and erected as a complete unit on wood backup

At the right is a cross section of the dome, showing the insulating layer, the slope sheathing and the construction of the wings. The lantern stands above this

ing with the building and its furnishings. Copper was selected as the material most in keeping with the coloring of the exterior and the permanence demanded.

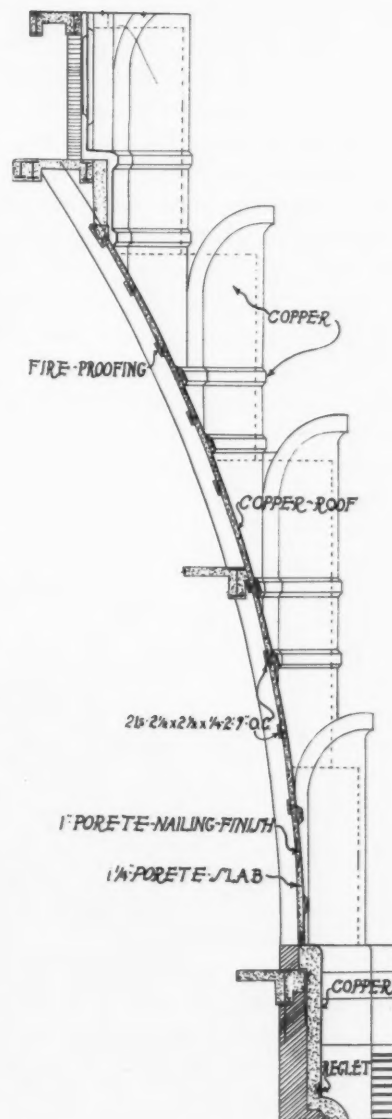
This copper contract was awarded to Benjamin Reisner, sheet metal contractor of New York, who was also the contractor for the Chrysler Building. A separate contract covered the erection of aluminum spandrels under the windows of the base structure. These spandrels are all cast aluminum of a design prepared especially for the hotel. This contract was completed months before work on the other metal was begun.

More than 80,000 pounds of copper were required to sheath the towers, cover the hatchways and decks of the various roofs and for flashing. Much of this copper was

fabricated into interesting molding courses and for special wings and panels which provide the ornamentation. An explanation of the fabrication followed on one of the towers is typical for both.

The copper contract begins at the bottom of the slope of the tower domes. Roughly, the copper follows the form of moulding panels alternated by higher courses of plain flat copper sheeting. This part of the dome is topped by a wide moulding course on which stands the lantern housing. Along both axis of the dome there is a projecting ornamentation of four setback wings one on top of the other and following the contour of the dome.

The structural framework supports a layer of Porete, a light weight insulating material. This



was insulated from the copper by paper. For all the ornamental wings and copper panels suitable wood framing was provided to fasten the copper. Some of the cross section details show how this backup material supports the copper.

The moulding courses were fabricated in the contractor's shop and shipped to the job in sections which were then anchored in place and soldered. Each section of the moulding consisted of the top and bottom belt courses with the in-between panel. This panel is composed of triangular V-sections running from the top belt to the lower and forming a triangular panel between each pair. The back panel is again formed as a triangular pyramid with the apex projecting out as far as the cross bars.

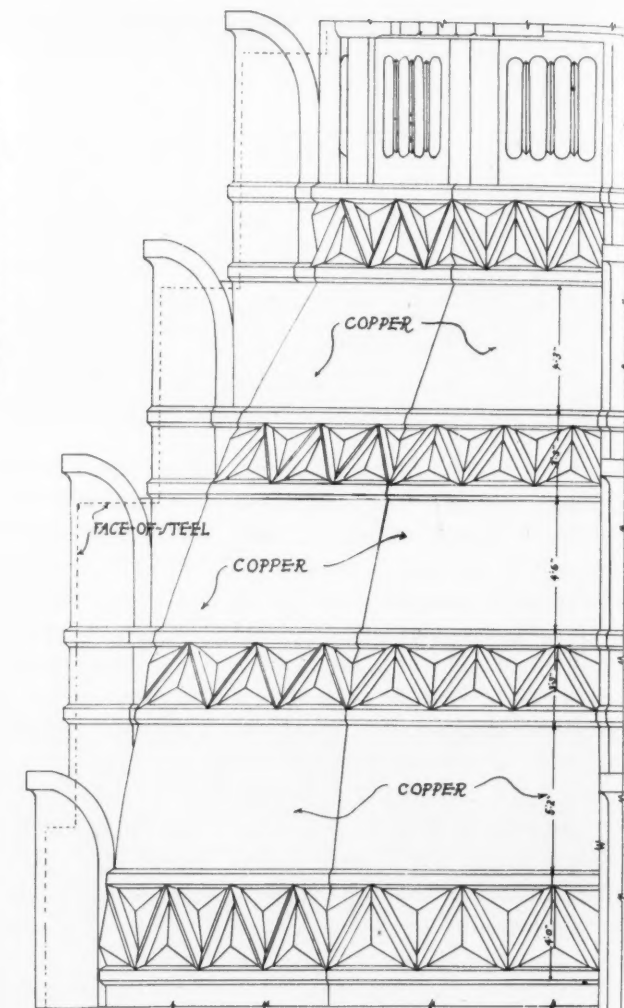
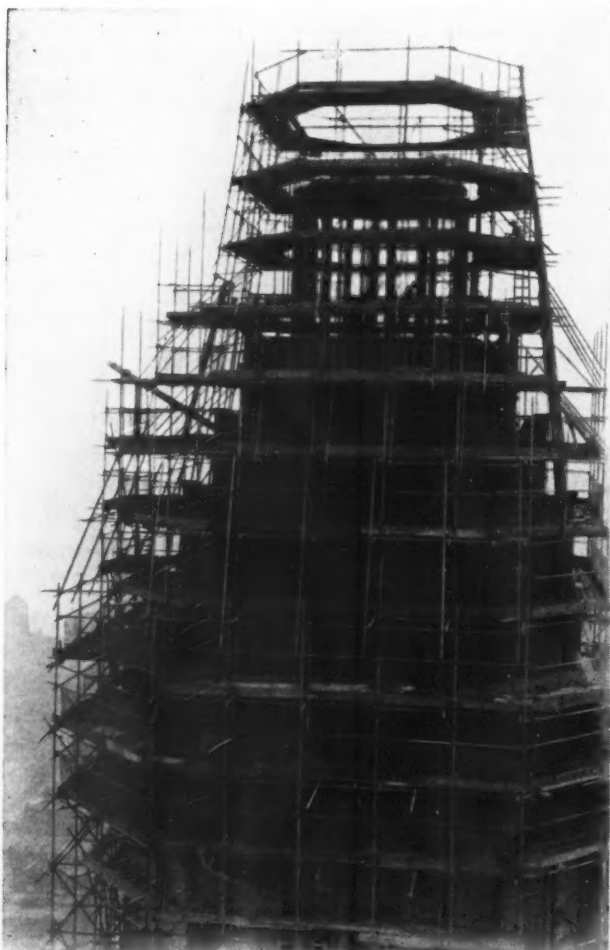


This is the first full course of copper. The top of the masonry is protected by a copper sheet waterproofed as shown. The first belt molding also shows

The ends of the cross bars were all soldered to the top and bottom belt courses and the pyramid panels are soldered top and bottom to the belt courses and along the sides to the cross bars. The junction of these panels with the flat sheathed courses on the dome is also soldered. These ornamental belt courses are 4 feet high. The time required to form and assemble all the sections of copper required for the large girth of the dome can be appreciated from the photographs.

The fabrication and erection of

Right is a cross section of the ornamental belt courses of the dome. These moldings were assembled as two belts, top and bottom, and the in-between panel. The sections were then erected on the dome and the seams soldered from the scaffold



New York contractors use a pipe and fireproofed board scaffolding since several expensive and dangerous fires have occurred on scaffolds. This is the Riesner scaffolding on the east tower. The men are working on the lantern

and surrounded by flat edges which meet the back edge of the wings and the copper of the courses adjacent.

One photograph shows how these panels were fabricated as small units and soldered together. A similar design was used for the vertical buttresses which form the base for each set back of a wing. On these buttresses, however, the panels of rounded sections was completed top and bottom with projecting mouldings.

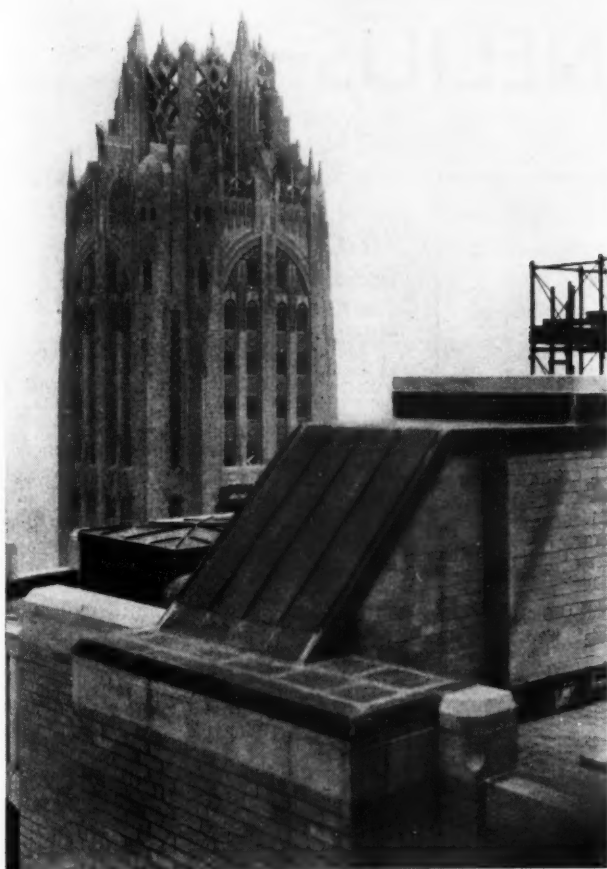
The setback wings which face north, south, east and west are the featured ornamentation of the towers. These wings stand on high pedestals, already described. The wings are so designed that the outside face is vertical, but the back edge turns down in a sweeping arc to meet the foot of the pedestal of the wing above. The stamped panels of the wings sweep in the reverse direction at the top. How the wings were sectionized shows

the flat sheeting on the dome slopes is plain loose lock seams on rectangular sheets. The long axis of the sheets runs around the dome. The sheets were formed with a back side lock on the bottom and right side and a top side lock on the top and left side. The sheets were assembled around the dome according to this seaming.

This section of the work, aside from the shop fabrication for the panels, entailed only ordinary erec-

tion, but the ornamental panels which form the wings and the bottom course following the stone and the top course below the lanterns required much soldering and considerable more intricate fabrication and erection.

The ornamental flat panels were formed from molds sculptured for the tower. The basic design is shown in one of the photographs and consists of four wide rolled vertical sections between flat panels

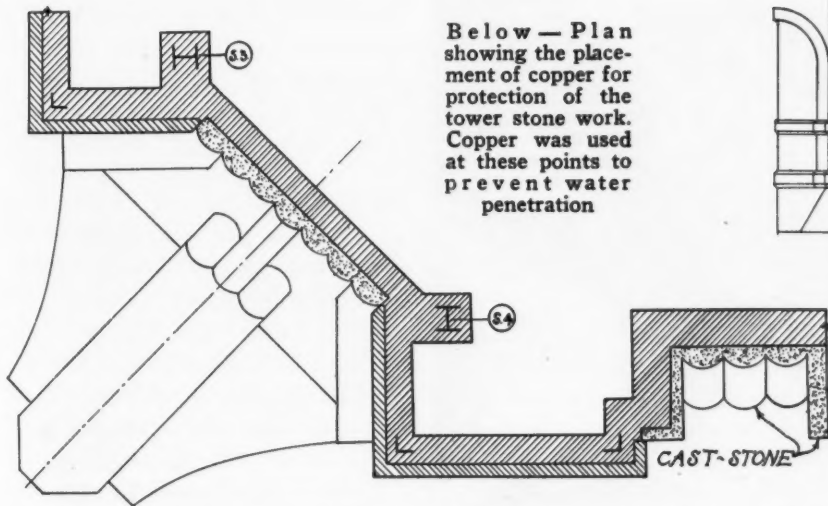


Left—A view showing some of the miscellaneous copper work on the building

Below—Elevation of the lantern. The drawing shows where the division between aluminum and copper occurs. The panels will all the glass held in aluminum frames.

clearly on one or two of the photographs.

Both the panels and the wings are supported on wood backup sup-



Below — Plan showing the placement of copper for protection of the tower stone work. Copper was used at these points to prevent water penetration

ported in turn on the structural frame.

The lantern housing which finishes off the tower is glass and aluminum. The architectural motif is a continuation of the fluted panels and wings of the main dome below. At the level of the topmost wing there is a wide belt course of the

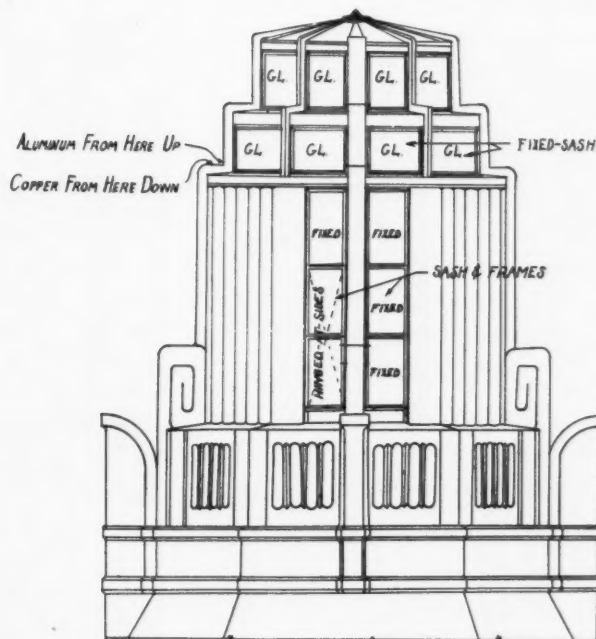
fluted copper panels forming an eight sided base for the housing proper. The top of this base is a flat sloped deck of copper and from this deck rises the higher fluted panels of copper with narrow glass panels set into the copper panels. The glass frame here is aluminum.

Above this section is the alu-

minum and glass lantern. As much of the surface of the lantern as possible is glass, with the panes held between vertical mullions of aluminum and flat battens of the same material. There are two setback vertical surfaces to the lantern and on top a flat sloped roof of glass held between radiating aluminum battens. The construction used is shown in one of the detail sketches.

There is several hundred feet of copper flashing used on the setback roofs. This was all standard two piece flashing. In addition considerable copper went into the deck roofs, hatchways, and ventilators which are located on the various roofs.

One of the most interesting features of the Riesner contract was



the use of copper waterproofing for all the bathroom floors throughout the hotel. The bathrooms are finished in tile, but in order to make certain that no water penetration might spoil decoration, each tile floor is underlaid with a copper pan which has sides running up the walls to a point above which water will never stand even though the drains clog. These waterproof floors consist of a flat floor sheet with the four edges turned up and soldered tight.

In addition a similar waterproofing was used on all kitchen floors
(Continued on page 26)

So SEZ CORNELIUS—

Fire-O City, Mich.,
Sept. 15, 1930.

Mr. Cornelius Clutts,
Spring Valley, Iowa.
Dear Mr. Clutts:

Welcome to our happy family!

It gives me the greatest pleasure, Mr. Clutts, to greet you as the newest member of our large, loyal and ever growing group of contented Fire-O Furnace Dealers. I am quite sure that the exclusive dealership which you have acquired for the city of Spring Valley will prove the turning point in your life. We are expecting great things of you, Mr. Clutts, and you may rest assured of ample reward in the form of handsome profits and fast friends made through the sale of Fire-O Furnaces.

I am, with all best wishes,
Yours sincerely,
Thomas Blattmore, President,
Fire-O Furnace Co.

* * *

Spring Valley, Iowa,
Sept. 21, 1930.

Mr. Thomas Blattmore, Pres.,
Fire-O Furnace Co.,
Fire-O-City, Mich.

Dear Sir:

I received your letter, also the furnace which I ordered for my showroom. I don't know exactly what you mean by the turning point in my life, but I believe you are a little bit late. The turning point was several years ago when I married my wife. I have been turning more or less ever since. I am at present thinking over several good ideas and when I pick out the best one expect to have something good to report. In the meantime, I am,

Yours truly,
Cornelius Clutts.



"I wish I could have seen him when he got your letter saying I was your new dealer."

Fire-O City, Mich.,
Oct. 1, 1930.

Mr. Cornelius Clutts,
Spring Valley, Iowa.
Dear Mr. Clutts:

Mr. James MacDonald of near your city has recently made inquiry regarding the Fire-O Furnace. He apparently is particularly interested in the Excell-O No. 1 Model, which as you know is our lowest priced product. We have written him at length, sending along one of our beautiful folders, and have also informed Mr. MacDonald that you are our exclusive dealer in Spring Valley. I trust that you will call on this prospect at an early date, and that you will be successful in convincing him that the Fire-O is the furnace he needs.

Yours sincerely,
Stafford Starrett, Sales M.,
Fire-O Furnace Co.

* * *

Spring Valley, Iowa,
Oct. 10, 1930.

Mr. Stafford Starrett, Sales M.,
Fire-O Furnace Co.,
Fire-O City, Mich.

Dear Sir:

I know you will be surprised, but I can't say that I was delighted to receive your letter informing me that old man—that Mr. Jas. MacDonald—wanted to buy a furnace. Of course, he would pick out the cheapest one. It is one of these cruel twists of fate, I guess, that "Scotty" MacDonald turns out to be my first prospect. I wish I could have seen him when he received your letter. If he wasn't so tight I would say that he just about blew up when you told him about me selling the Fire-O Furnace in Spring Valley.

You see, me and Scotty are not on very good terms, not that we

don't speak or anything, but just sort of say "howdy" when we meet and that's all. It all happened about two years ago last May.

My uncle, who used to run the old mill on the edge of town, died and left the property to me. The mill hadn't been run for some time so I just let it stand without doing anything about it. The mill dam was still there and everything. Old man MacDonald owns the property, about ten acres, next to my uncle's and adjoining it directly below the dam. I remember it as well as yesterday when the big rain storm came and washed out the old dam. The water poured all over Scotty's hog lot, about two feet deep, and before he could get them out to higher ground, about a dozen of his hogs were drowned. At least he claimed they were, although the boys down at the barber shop told some kind of a story about them dying for lack of sleep. Jim Patterson, one of the boys who never amounted to much, explained that the hogs waded around in the mud until they were covered with it, and then when they got out in the sun and dried off the mud caked and pulled their hides so they couldn't close their eyes. They went on like this for two or three days and then died for want of sleep. Of course, I laughed with Jim but when old man MacDonald heard it, he got madder than ever. So ever since that time, he has had it in for me although, as you see, I wasn't to blame.

Yours truly,
Cornelius Clutts.

* * *

Fire-O City, Iowa,
October 13, 1930.

Mr. Cornelius Clutts,
Spring Valley, Iowa.

Dear Mr. Clutts:

There is one thing our dealers never do. That is to think of a prospect as "tough" until they have gone out and sold him. You must remember, Mr. Clutts, that you are no longer simply Mr. Clutts of Spring Valley, Iowa, but Cornelius Clutts, Exclusive Dealer for Fire-O Furnaces.

You are now one of that great fraternity—"Purveyors of comfort to the American public."

Now, Mr. Clutts, remember you are backed by one of the largest and best known manufacturers in the country. Regardless of your personal differences with Mr. MacDonald you now are a salesman for a product every home owner wants and needs.

Remember this, Mr. Clutts, and go out and sell him.

Yours sincerely,
Stafford Starrett, Sales Mgr.,
Fire-O Furnace Co.

* * *



"The sun caked the mud so they couldn't shut their eyes and they died for lack of sleep."

Spring Valley, Iowa,
Oct. 17, 1930.

Mr. Stafford Starrett, Sales Mgr.,
Fire-O Furnace Co.,
Fire-O City, Mich.

Dear Sir:

You probably will be surprised at hearing that on my first attempt I made a sale of one Fire-O Furnace. Well, it was a sale, but not to the person you may think it was to.

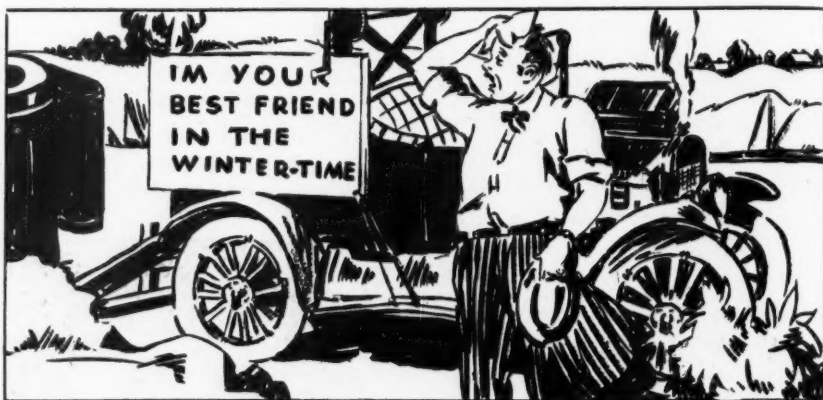
To give you an idea of the deal and my ingenuity, I will explain. When I got your letter I got busy right away. I was stumped for a minute but as usual quickly doped out a plan to go about making the sale. You see, Scotty has a lot of curiosity, always poking his nose in

things, and is the first one around when anything happens or there is something out of the ordinary to see. I got Joe Palmer, the blacksmith, to help me rig up a contraption so I could hoist the furnace up on the back of my flivver truck. I figured out a slide so that when the furnace was tilted a little, it could be slid off easy when I wanted to take it off. Well, to make a long story short, I put the furnace on the back of the truck and nailed up a big banner with words on it, "I'm your best friend in the winter time." This was on a Wednesday afternoon. The next morning I planned to drive out by Scotty's place and "accidentally" stall the truck right in front of his house. While I was pretending to fix the truck, I knew that old Scotty, if he was around, would let his curiosity get the best of him and come out to see what was on the truck. I figured on just letting him look around awhile without me saying anything, and that sooner or later he would start asking questions and then I would gradually ease into my sales talk. So I loosened a wire on the motor to make it easy to yank off at the proper moment. The next day, Thursday, I started out about ten o'clock. It's about four miles to Scotty's place, so I drove slow and easy so as not to shake up the furnace. Everything went fine until I got about two miles out on the road when all of a sudden the truck stopped, just like that. Just a couple of wheezes and then she died. I figured that maybe the wire was too loose and had come off by itself. So I got down from the driver's seat and looked over the wiring but it appeared to be all O. K. Then I looked in the gas tank but it was full, and after first inspecting this jigger and that one, and finding nothing wrong, decided that maybe the weight of the furnace on the truck had caused something to go haywire. I clambered up on back and started prying around. Somehow or other, I don't know exactly just what I did, but anyway by some hook or crook, I released the tilting apparatus and

first thing I knew up come the furnace. Without any hesitation at all it started a slow descent down the skids which I had made for the purpose of unloading. I tugged and pulled back but to no avail for she kept right on her way and in the time it takes to tell it, came to rest gently and easily on the ground. So there I was, first with a broken down truck, and then with a perfectly good furnace setting alongside the road. I emitted a few choice phrases, wiped the sweat from my brow, and attempted to pull myself together so as to be able to meet the situation. Right then, for the first time, I noticed that I was almost directly in front of Abel Smith's house, which sets back from the road about sixty feet. Well, I thought, I will call on Abel for help. It was about a quarter of eleven by this time so I figured he would most likely be about the barn, which was located on the opposite side of the road, or else in the field back of the barn. So I crossed over to the barn, and seeing no one around, went in back, out of sight of the truck, and looked in the cow pasture. I spent a few minutes, maybe fifteen or twenty, in trying to locate Abel, but being unable to find him, started to retrace my steps to the truck. I approached the road and was just going to open the barn lot gate when my gaze, wandering toward the truck, failed to see the furnace. It should have been in plain view from where I stood, but no sir, she wasn't there. I hurried over, and you can strike me dead, if that furnace hadn't disappeared, just like the earth had opened and swallowed it. I rubbed my eyes and looked again, but there was no furnace, nothing but a round place in the soft ground where it had stood. I was sure enough stumped then, and started at a dog trot up to the house. I rapped on the front door and after waiting it seemed like ages, heard someone approaching. When the door opened, a total stranger confronted me. "I was looking for Abel," I began, "you see my truck broke down, then the furnace disappeared and—" "Excuse

me," the stranger interrupted, "evidently you have not heard about it, but I bought out Abel two days ago and am moving in today. The trade was made rather suddenly, and as I wanted immediate possession, Abel agreed to move out at once. My name is Felix Thompson, and if you will go on with your story, I'll be glad to help you if I can." I ex-

thought up to this time. I intend to make some improvements to the property, and among them was considering installing a central heating plant. Now that you are here, and the furnace is here, maybe we can talk business." For the second I was hard put to find words, but managed to launch into a good sales talk and before I finished had



"By some hook or crook I released the tilting apparatus and there I was with a broken down truck and my furnace setting alongside in the road."

plained about the truck, and the furnace disappearing, and when I finished, I thought I could see a sort of smile creeping over his countenance. "Indeed," he said, "that is most extraordinary. But maybe we can solve the mystery of the disappearing furnace. Let's go around in back and see if the boys who are helping me move know anything about it." So we proceeded to the back of the house, and when I stepped out on the back porch, the first thing I saw was the furnace setting there as big as life. Three husky fellows were unloading some other stuff from a big truck, and when Mr. Thompson spoke to one of them the fellow said, yes, they moved the furnace, thinking it had been delivered and ought to be brought in to the house. I certainly was relieved to see the furnace again, and proceeded to tell Mr. Thompson about my starting out to Scotty MacDonald's place where I hoped to make a sale. He stood silent for a moment, stroking his chin, then spoke up suddenly. "Well, this certainly is a coincidence. You know, I have been figuring on buying a furnace, but really hadn't given the matter much

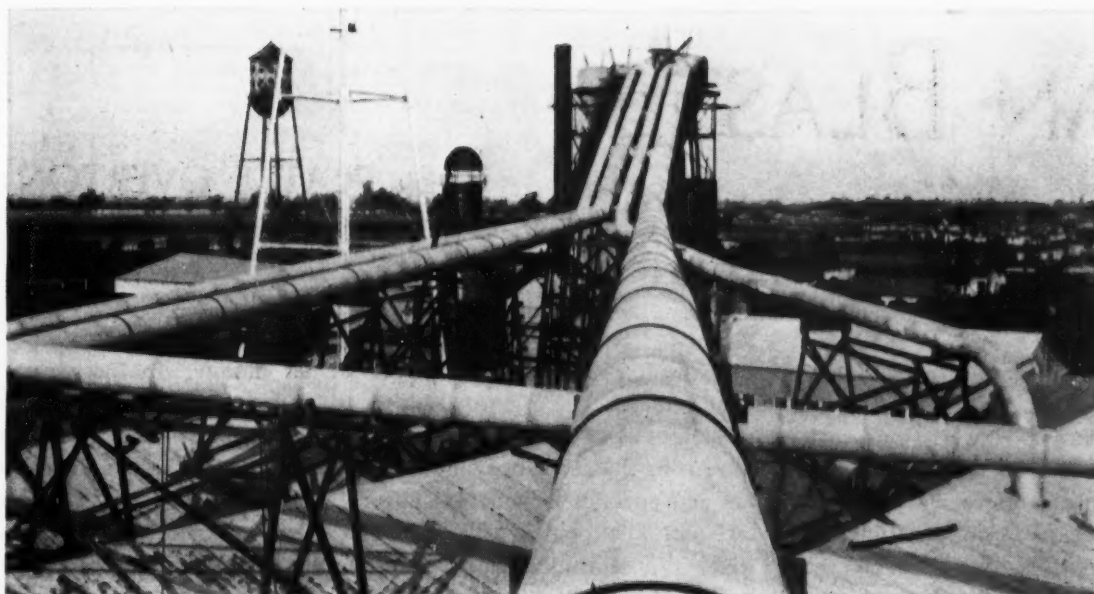
warmed up to the situation in splendid fashion. I concluded with a grand flourish, and Mr. Thompson spoke up immediately. "Regardless of what you said, I still believe your furnace is a good one. The name isn't new to me, and I have heard good reports about it. I make up my mind in a hurry, and have decided to buy the furnace from you. Suppose I come in town tomorrow and we will complete the transaction. I will give you my check at that time, and we can arrange about the installation." "That's fine, Mr. Thompson," I said in a very business like manner. "Now if one of your men will come out and help me with the truck, I will be on my way back to town." So with that, one of the movers went out to the truck, and while I sat in the driver's seat, he gave the crank a quick spin. Again, I could hardly believe myself, when the motor started off instantly, with no trouble at all.

Pretty good sale, wasn't it?

Yours truly,

Cornelius Clutts.

P. S.: My wife will just about pass out when she hears that Abel Smith has up and moved without her knowing a thing about it.



This is the overhead system just before it rises to the collectors

A California Blow Pipe System

By J. EDW. TUFT

THE blow pipe system installed for the Pacific Manufacturing Company, at Santa Clara, California, by W. C. Taylor, sheet metal contractor, Pasadena, Cal., is one of the largest systems of the kind on the Pacific coast and probably contains as large an amount of sheet metal as any door and sash factory has put into a modern blow-

pipe system west of the Rocky Mountains.

The main discharge pipes above the building carry the shavings, sawdust, etc., to the boilers where these materials are used as fuel and are four in number. The largest one is 43 inches in diameter, the second one is 33 inches, the third one is 31 inches and the fourth one

25 inches.

The pipe of major size in this installation is more than two hundred feet long. At the point where the collector is located the pipe attains an altitude of eighty feet.

Refuse is received from a large number of fans. A general pick-up of saw-dust and shavings is made by a Number 100 Buffalo forge, slow speed, driven by a 100 horsepower motor. There are also two Number 80 fans of the same make picking up from the saws and stickers, each driven by a 40 horsepower motor. There are two Number 60 fans, one picking up from the matcher, and a Number 50, each driven by a 40 horsepower motor.

The refuse is relayed along the way by being caught in sub-collectors and finally furnishes a good portion of the fuel used in the boilers.

The entire sheet metal job was done by Mr. Taylor's force, fifteen men working for five months to complete it. Not only the blowpipes but the collectors were included in the job.



Some of the pipe sections used in the system

FAN BLAST ENGINEERING

By PLATTE OVERTON
Heating Engineer

WE will now turn our attention to the selection of the fan or blower. Our data sheet calls for 16,639 c.f.m. at 120 degrees and as explained in the issue of *AMERICAN ARTISAN*, June 1st, the fan will handle air from the outside with a mean temperature of 40 degrees. In volume our fan will handle 14,200 c.f.m. approximately.

The air to the fan will vary in temperature, as the weather varies, and in extremely cold weather more air will be delivered. This will cause the pressures to vary, but not enough to jeopardize the successful performance of the installation. The cross section shows the fan as it will sit when installed. The air is blown down and this type of fan is known as a seven-eighth housed, bottom horizontal discharge. It is

single width, single inlet with overhung pulley.

Various types of discharge are shown on the accompanying drawing and our fan is same as shown as No 2. The rotation will be clockwise. We determine the clockwise or counter-clockwise rotation by standing facing the pulley.

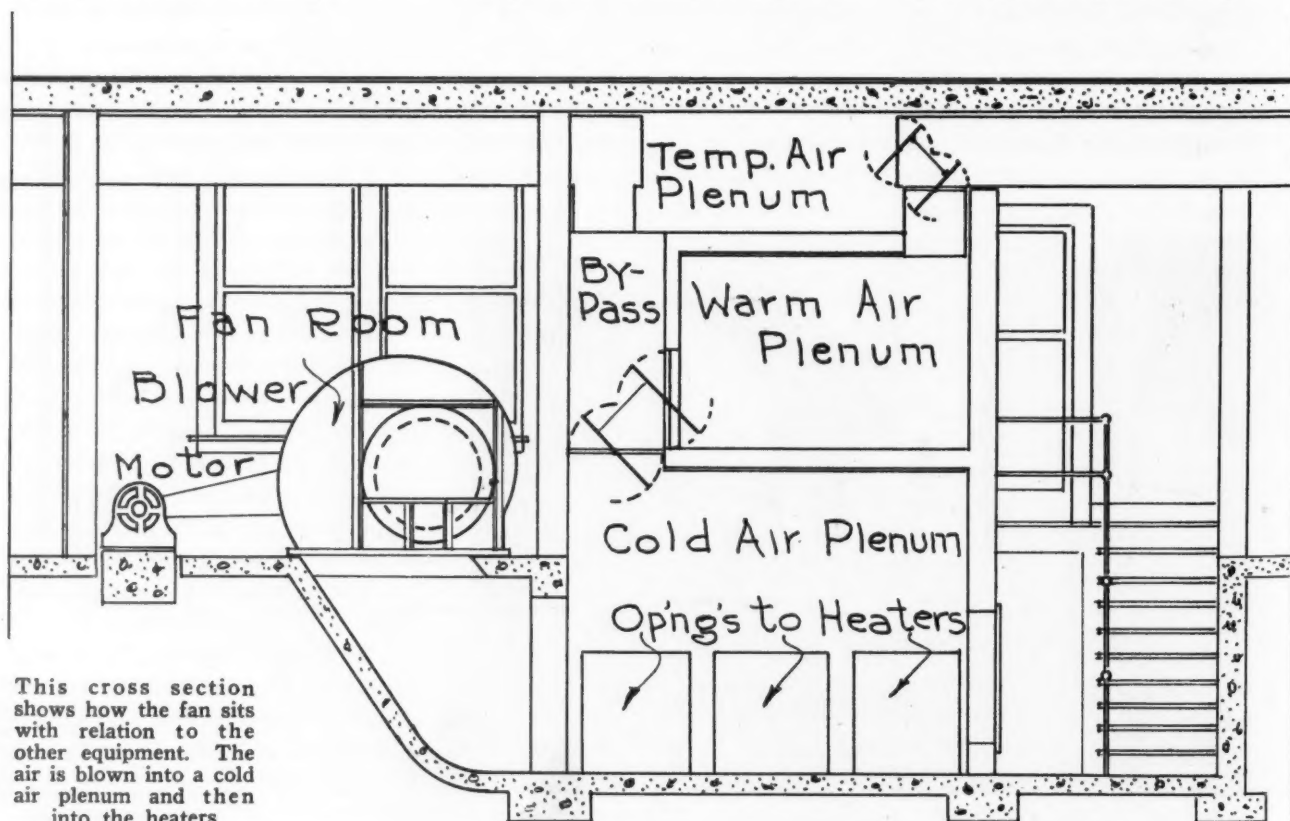
Many books have been written on various types of fan and blowers and their performances, and it is not our intention to discuss this data. The engineer or contractor is safe in the selection of any standard fan, rated and tested according to the A. S. H. & V. E. code. The various data or fan performance may be obtained from the manufacturers' catalogs.

Our outlet velocity at the fan discharge must not exceed 2,000 feet

per minute. In factory or garage installations where noise is not objectionable, outlet velocities may run as high as 2,500 to 2,700 feet per minute at the fan discharge. Two thousand feet per minute is a maximum in schools or theaters. In churches, lodge halls and residences discharge velocities should not exceed 1,600 feet per minute.

Our static loss will be $\frac{1}{2}$ inch (future article), hence we choose a fan to deliver 14,200 c.f.m. at $\frac{1}{2}$ -in. static pressure.

The fan performance data as shown here is taken from the catalog of the manufacturer, and shows our requirement. [It might be mentioned here that while our outlet velocity might be higher, the next size smaller fan had an outlet velocity of 2,200 feet per minute.]



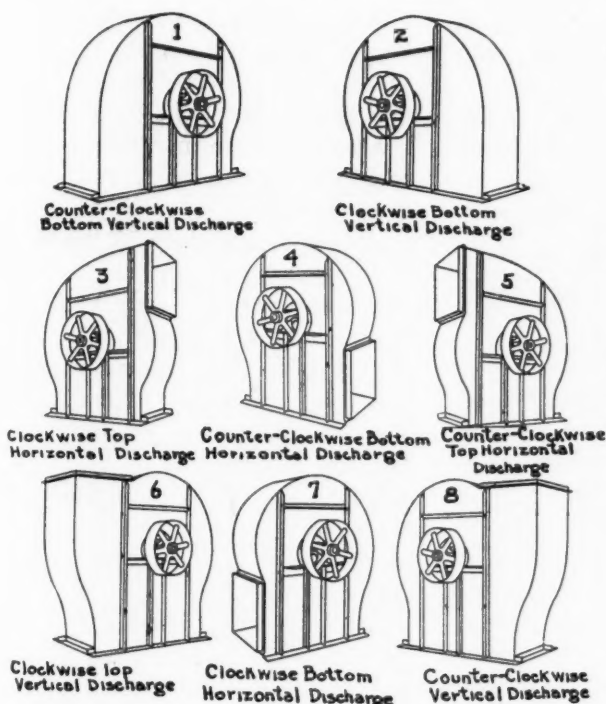
This cross section shows how the fan sits with relation to the other equipment. The air is blown into a cold air plenum and then into the heaters

Courtesy New York Blower Company
Capacity Table for No. 45 Type ME Fan

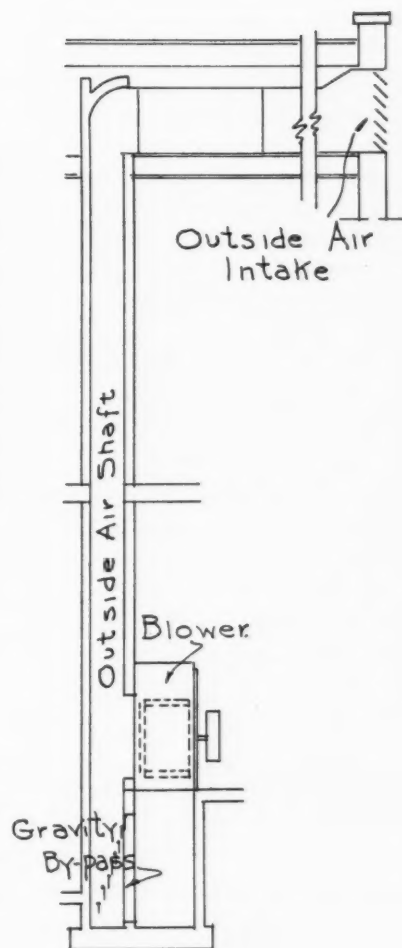
Wheel Diameter 45 Inches
Wheel Circumference 11.75 Ft.

Single Width
Single Inlet

Volume Cu. Ft. per Minute	Outlet Velocity Ft. per Minute	Add for Total Pres.	1/4" S. P.		1/2" S. P.		3/4" S. P.		1" S. P.		1 1/4" S. P.		1 1/2" S. P.		2" S. P.		2 1/4" S. P.		2 3/4" S. P.		3" S. P.	
			RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8350	1008	.063	129	.82	158	.84	188	1.06	189	1.33	209	1.76	224	2.22	241	2.60						
10285	1100	.076	133	.75	153	.97	170	1.30	189	1.46	209	1.91	224	2.40	240	2.75						
11220	1200	.090	138	.86	157	1.11	173	1.36	191	1.63	209	1.91	224	2.40	240	2.75						
12155	1300	.106	143	1.02	161	1.20	177	1.53	193	1.82	210	2.11	224	2.40	240	2.75						
13090	1400	.122	148	1.16	166	1.46	181	1.72	196	2.02	212	2.31	228	2.83	241	3.24						
14025	1500	.141	153	1.34	171	1.65	185	1.94	200	2.26	215	2.58	228	2.83	241	3.24						
14960	1600	.160	158	1.55	176	1.87	190	2.24	204	2.51	219	2.85	231	3.27	243	3.54						
15895	1700	.180	164	1.76	181	2.10	195	2.49	209	2.82	223	3.17	234	3.50	246	3.86						
16830	1800	.202	169	2.03	186	2.36	200	2.75	214	3.16	227	3.46	238	3.83	249	4.23						
17765	1900	.225	175	2.29	192	2.65	205	3.07	218	3.46	231	3.81	243	4.17	253	4.62						
18700	2000	.250	180	2.58	197	2.97	210	3.38	223	3.81	236	4.23	247	4.65	257	5.00						
19635	2100	.273	185	2.88	202	3.28	216	3.73	228	4.17	241	4.57	252	5.07	261	5.43						
20570	2200	.302	190	3.19	207	3.61	221	4.15	233	4.55	246	5.00	257	5.46	266	5.92						
21505	2300	.330	195	3.51	212	3.95	226	4.45	239	5.02	251	5.52	262	5.91	271	6.48						
22440	2400	.360	200	3.84	217	4.30	232	4.97	245	5.50	258	6.03	267	6.43	276	6.95						
23375	2500	.390	205	4.17	222	4.65	237	5.45	250	5.91	261	6.40	272	6.97	281	7.55						
24310	2600	.422	210	4.51	227	4.97	243	5.97	255	6.45	267	7.02	277	7.50	286	8.17						
25245	2700	.459	215	4.86	232	5.32	248	6.32	260	6.85	272	7.35	283	7.83	292	8.45						
26180	2800	.489	220	5.21	237	5.67	253	6.67	265	7.20	277	7.80	288	8.30	297	8.90						
27115	2900	.520	225	5.57	242	6.03	258	7.03	270	7.63	282	8.20	294	8.70	303	9.30						
28050	3000	.560	230	5.93	247	6.39	263	7.39	275	8.00	287	8.60	299	9.10	308	9.70						
28985	3100	.608	235	6.30	252	6.75	268	7.75	280	8.35	292	8.95	304	9.45	313	10.05						
31790	3400	.721	245	7.41	262	7.86	278	8.96	290	9.56	302	10.16	314	10.66	323	11.26						



Above is a typical fan table showing performance against static pressures, volume, velocity, R. P. M. and horsepower. At the left is a group of different fan housings with their engineering names. Each fan is named from its discharge position. At the right is a roof cold air intake. The air is drawn through the flue into the blower



Our data shows that this fan must run 190 revolutions per minute and will require 2.24 brake horsepower.

If we have a 5-inch pulley on the motor and this motor runs 1,200 revolutions per minute, our fan pulley will be $(1200 \times 5) \div 190 =$

$31\frac{1}{2}$ approximate in diameter.

Our tip speed will be the revolution per minute times the wheel circumference or $190 \times 11.75 = 2,232$ feet per minute. For this class of work the tip speed should never exceed 3,000 feet per minute to prevent noise.

During the past week practically the whole country east of the Rocky Mountains has sweltered in 90 to 100-degree weather. This excessive heat has probably done more to make the American public think of summer cooling than all the talking done in the past ten years. We should capitalize on it. What, if anything, have you done to boost your business by talking about cooling? We would like to know

Fresh Air for Locker Rooms

A Discussion of Locker Ventilation Requirements and Practices with Suggestions on How to Design and Choose the Necessary Equipment

By **ROBERT C. NASON**

ONE has only to read building reports to realize how rapid is the growth of sports buildings construction. Back yard baseball and football must now be conducted in stadia of dimensions that outRoman the Romans. Pasture golf wherein players dressed and undressed in old barns has given way to country clubs of huge dimensions. And with such buildings there comes an excellent opportunity for warm air and sheet metal contractors to equip locker rooms with ventilating apparatus.

Unless properly supplied with fresh air, the average locker room is quite likely to be offensive on account of perspiration odors. Perspiration, being largely of a chemical nature, not only offends the nose but destroys and discolors clothing unless it has been absorbed by positive air circulation.

The old method of ventilation was by the uncertain procedure of the open window. While this may be feasible in July and August and when there is a fair wind blowing in the right direction, there are serious objections to it throughout the other months of the year.

The prevailing winds, for example, may be in the wrong direction; they may drive the odors from the locker rooms inward rather than outward. In spring, fall and winter open windows are certain to chill such rooms below the safety point by extracting the heat along with the smells.

Artificial ventilation of locker rooms permits several good methods. Cheapest of these, perhaps, is the roof ventilator. When the rooms to be ventilated are on an upper floor the natural vents may be pressed into service without hesitancy.

Locker rooms are, however, more often in basements or lower floors and this may preclude the natural ventilator. In this case the cheapest mechanical equipment to install is the familiar electric propeller, or disc fan.

Fig. 1 shows a typical locker room and an exhaust fan properly installed in a wall and located about 7 feet above the floor. The success of this type of arrangement involves the closure of apertures in

the immediate vicinity of the fan to prevent short circuiting of the air exhausted. The best place for the entrance of the fresh air to replace that withdrawn is at the opposite end of the room.

If the mechanical ventilating system is to be operated over 10 months of the year a gentle, rather than a strong, air current through the room is preferred, due to the danger of chilling. This would apply especially to northern states where the warm season is relatively short.

An air change every 12 minutes usually is adequate and rarely may this be greater than once every 8 minutes except in summer. The fan size to effect this is readily estimated by dividing the cubical contents of the room by 12, for a 12 minute air change, or by 8 for an 8-minute air change. The result is the number of cubic feet of air to be exhausted by the fan or ventilators per minute.

The most comprehensive plan of ventilation for locker rooms is the connection of 3-inch branch pipes to the tops or backs near the tops of individual lockers. These, in

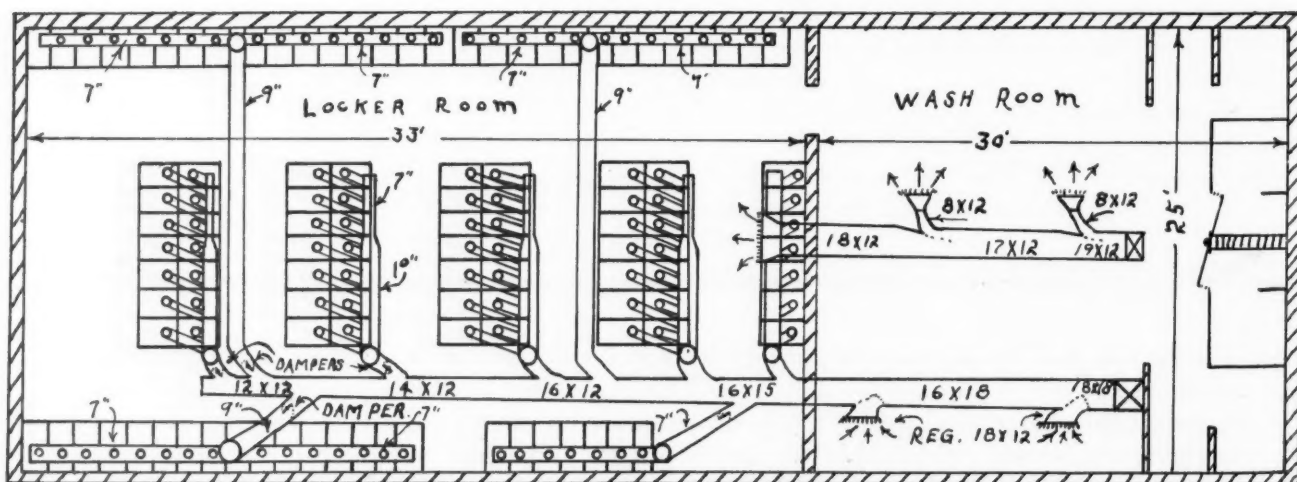


Fig. 1. Layout of a typical locker room assembly with a mechanical ventilating system installed. Every locker is tapped into the ducts through an individual pipe. Room air is withdrawn through open faces

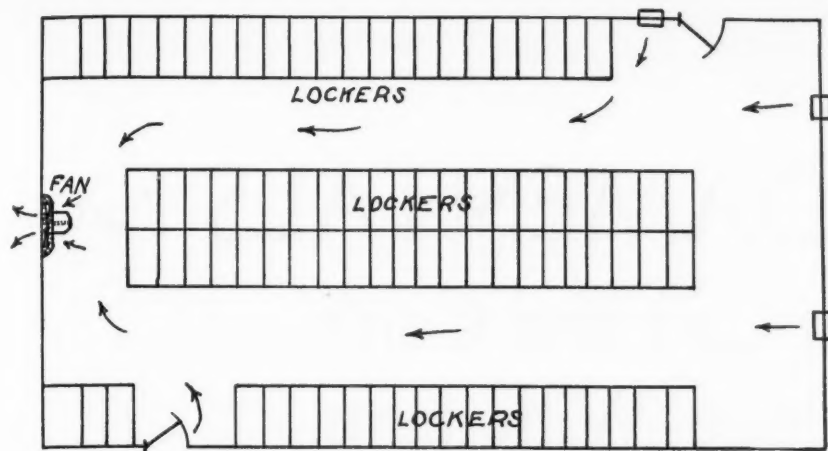


Fig. 2. This room uses wall and center space for the lockers. One fan placed in the center of one end withdraws room air, but cannot be depended on to thoroughly ventilate the lockers

turn, are joined to a main duct that connects to the inlet of a centrifugal fan. Such a system represents the most approved and most effective plan.

The same arrangement may be applied to ventilating any group of small rooms such, for instance, as telephone booths, radio demonstration rooms, photographic dark rooms, theatre dressing rooms and many similar small room groups. In the layout offered as Fig. 2 one observes that lockers are placed in the center, also along the side walls. Each has its own 3-inch branch duct.

Attention is also called to the wash room adjoining the locker room. Both rooms should have a fresh air supply as well as an exhaust system. A portion of the fresh air duct is shown in Fig. 2, the air being delivered to both rooms, while the damp odors from hanging clothing are exhausted through the small branches and delivered outdoors. Two openings in the exhaust main in the wash room, with grilles over them, supplement the locker suction through the individual branches. Louvres in the bottoms of the locker doors provide circulation through each.

Successful exhaust of locker odors demands a fairly rapid current of air through them. Most any sort of stream will, it is true, carry off the ordinary impurities and dry the clothing but to do the job thoroughly requires about three air changes per minute through each

locker. On this basis the 107 lockers shown should have 20 cu. ft. min. through each, or a total of 2,140 cu. ft. min. for all.

Circulation of air, rather than odor exhaust, is required for wash rooms, hence 960 cu. ft. min. is adequate for the wash room shown in the sketch. The total capacity of the exhaust fan, therefore, is 3,100 cu. ft. min.

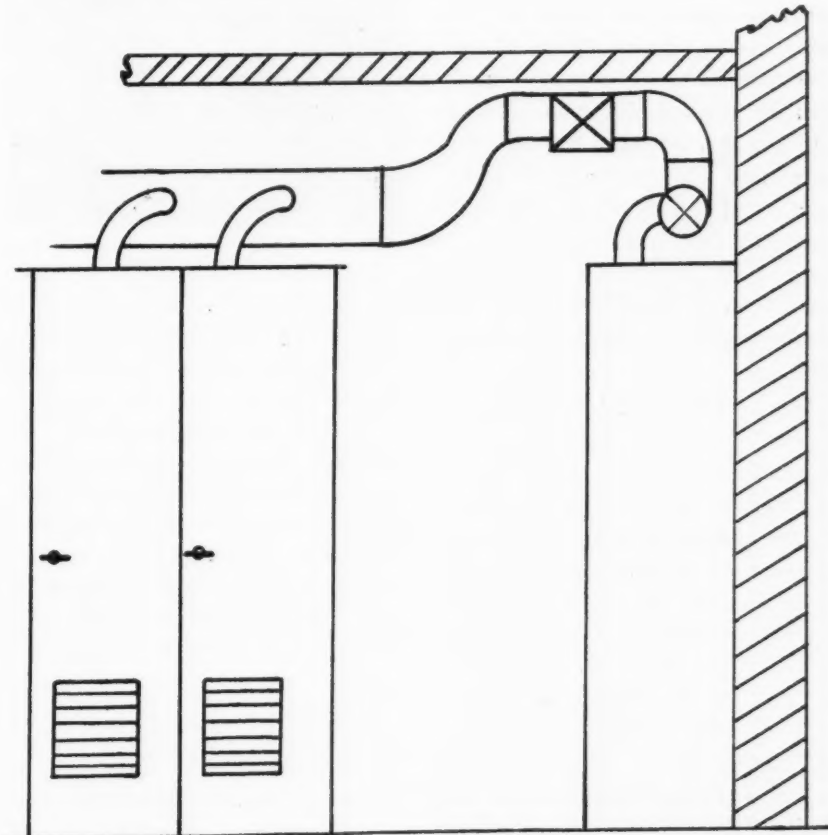
One of the common errors in de-

signing exhaust systems is connection of branches to the bottoms of mains rather than to their sides. How many times, too, does one see branches joining mains at 90 degrees. The better way is to connect branches to the sides of mains and at 45 deg. in the direction of air flow. How this is done in the condition under discussion is shown in Fig. 3.

Physical appearances in factory installations need not be catered to as carefully as in country clubs. Workmen are glad to receive the benefits of fresh air without regard to appearance. On the contrary members of country clubs view their accommodations with considerable pride. Literally thousands of businessmen think, talk and dream about their golf the year around.

On this account country club ducts must be concealed whenever possible. In ventilating the locker rooms shown the branches might have been connected to the backs of the lockers rather than to their tops

(Continued on page 30)



Detail of connection between lockers and exhaust duct in the system where every locker is mechanically ventilated. Air is drawn into the locker through the door louvers

APPLIED FAN FUNDAMENTALS [Part V]

What Can and Can't Be Done With Fans

AS has been previously explained, the quantity of warm air (expressed usually in cubic feet per minute) that must be supplied to a given room to offset the heat loss of the room and maintain the desired temperature, is determined by (1) the heat requirement of the room in B.t.u. per hour and (2) the temperature at which the heated air is delivered.

This fact must be clearly understood to avoid confusion and guard against unsatisfactory fan system operation. There are "thumb rules" for determining the number of cubic feet of air per minute to deliver to a given room and, if used with judgment by one who has had sufficient experience in fan heating, such rules can be made to yield good results. But any heating contractor to whom fan heating is relatively new, should be extremely careful about departing from the more accurate and basically correct rules.

One common thumb rule, for instance, is to provide for four recirculations per hour. This seems to be based on the reasonably correct assumption that in the average gravity plant installed according to the Standard Code, the air recirculates about three times per hour and that a fan system should increase this about $33\frac{1}{3}$ per cent. (Circular 15, University of Illinois, Engineering Experiment Station, a reprint of which can be obtained from the National Warm Aid Heating Association, shows that the heating plant in the Research Residence in

By **G. A. VOORHEES**
Heating and Ventilating Engineer,
Indianapolis, Ind.



G. A. Voorhees

zero weather, recirculated the air of the building at the rate of 2.93 recirculations per hour.)

To show the results obtained by applying this common thumb rule, let us assume that a given building has two rooms each 12 ft. by 15 ft. with 9-ft. ceilings, as shown in Figure 1. Each room contains 1620 cubic feet of space and according to the rule, each would be supplied with

$$\frac{4 \times 1620}{60} = 108 \text{ cu. ft. per minute.}$$

Now let us determine the actual heat requirement of each room and compare:

Room A:

Assuming four windows each 2 ft. 6 in. by 4 ft. 6 in. and two doors each 3 ft. by 7 ft., we have 66 square feet of glass surface. Forty-two running feet of exposed wall multiplied by the ceiling height of nine feet gives a gross exposed wall area of 378 square feet. Net exposed wall = $378 - 66 = 312$ sq. ft. Assuming this room to have unheated attic space above with no attic flooring, we have $12 \times 15 = 180$ sq. ft. of cold ceiling. The content of the room is 1620 cubic feet and a conservative furnace man would figure at least one and one-half air changes per hour due to leakage. Thus the Standard Code would give us a heat pipe area of:

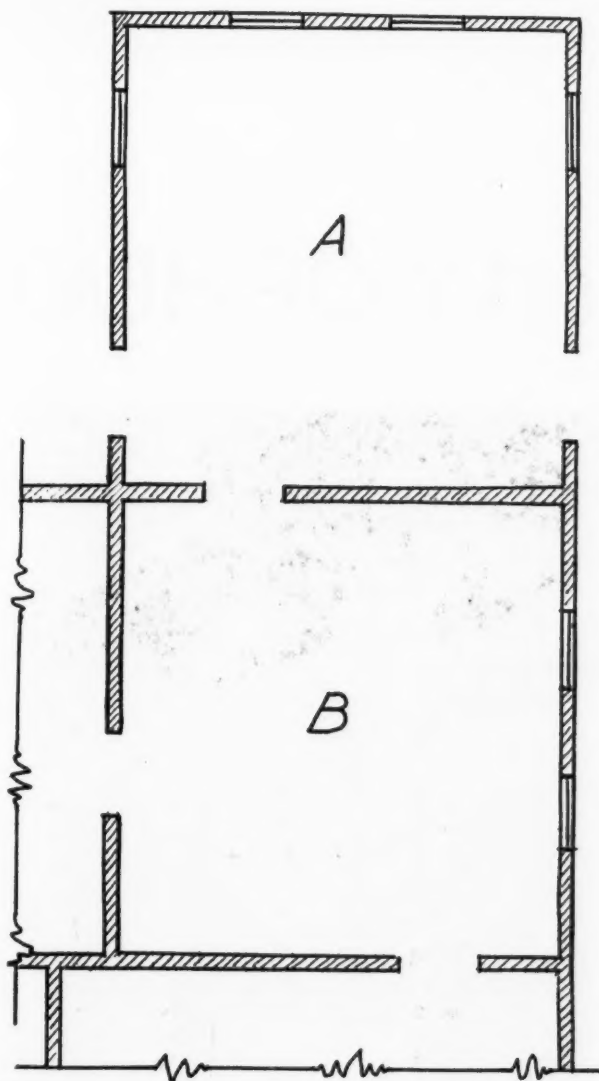
$$\frac{66}{12} + \frac{312}{60} + \frac{180}{50} + \frac{1620}{600} \times 9 = 153 \text{ sq. in.}$$

Room B:

Assuming two windows each 2 ft. 6 in. by 4 ft. 6 in., the glass surface would be 23 sq. ft. With only one 15-foot side exposed, the net exposed wall surface is $(9 \times 15) - 23 = 112$ sq. ft. Assuming this part of the house to be two-story, we have heated space above and do not include ceiling in heat loss computations. The leakage loss will be only one air change per hour and our Standard Code leader area will be:

$$\frac{23}{12} + \frac{112}{60} + \frac{1620}{800} \times 9 = 52 \text{ sq. in.}$$

Even without adding an exposure allowance which would increase still more the heat requirement of room A we find that it needs about three



Using this illustration, the text shows how rule-of-thumb methods for figuring heat requirements can go all "haywire" unless the designer knows basic principles and can correct for unusual conditions wherein rule-of-thumb falls down. See the text for a complete discussion of this problem

times as much as room *B*. Yet the previously mentioned thumb rule would provide 108 cubic feet of warm air per minute to *each* of these rooms.

This case, which is not at all extreme, illustrates the danger that lurks in many convenient thumb rules.

For further study, let us determine in a basically correct manner, the hourly heat loss of each room. These heat losses can be read directly from the charts given in the March 2nd issue or they can be computed by multiplying the square inches of Standard Code leader area by 111, the number of B.t.u. supplied per square inch of first floor leader per hour.

Thus for room *A*, the heat requirement is $111 \times 153 = 16,983$ B.t.u. per hour, and for room *B*, it

is $111 \times 52 = 5,772$ B.t.u. per hour.

For a 70-degree room temperature, a formula developed and explained in a previous article can be used to give the correct number of cubic feet of air per minute.

$$\text{C.F.M.} = \frac{\text{B.t.u. per hour}}{1.08 \times (\text{Reg. temp.} - \text{room temp.})}$$

$$1.08 \times (\text{Reg. temp.} - \text{room temp.})$$

With a room temperature of 70 degrees, if we adopt 130 degrees as our register temperature, this formula reduces to the form:

$$\begin{aligned} \text{C.F.M.} &= \frac{\text{B.t.u.}}{64.8} \\ &= \frac{16,983}{64.8} = 262 \text{ cu. ft.} \\ &= \frac{5,772}{64.8} = 89 \text{ cu. ft. per} \\ &\quad \text{minute for room B.} \end{aligned}$$

It will be noted that the thumb

rule which gave 108 C.F.M. for each of these rooms, was not so far wrong in the case of room *B*; a damper adjustment cutting the air delivery from 108 to 89 C.F.M. would take care of it and the heating contractor who uses such an approximate rule in his actual work, depends to a considerable extent on the use of dampers. Dampering would also help room *A* by limiting the air delivery to *other* rooms of the house and thus increasing the volume available for this exposed room, but it is anything but good practice to depend on dampering to more than double the air delivery to a given room.

Another way to increase the heat delivery to room *A* would be by "forced firing" to increase the register air temperature, but this also had better be avoided by more careful design. If the air volume is limited to 108 C.F.M., the required register air temperature to satisfy the room heat requirement of 16,983 B.t.u. per hour would be 216 degrees. This register temperature is determined as follows, from the equation:

$$\text{C.F.M.} = \frac{\text{B.t.u.}}{1.08 \times (\text{Reg. temp.} - \text{room temp.})}$$

which can be rearranged to read as follows:

$$\text{Reg. temp.} = \text{Room temp.} + \frac{\text{B.t.u.}}{1.08 \times \text{C.F.M.}}$$

Since a 70-degree room temperature is assumed and the volume of heated air delivered is to be 108 C.F.M., we have

$$\begin{aligned} \text{Reg. temp.} &= 70 + \frac{16,983}{1.08 \times 108} \\ &= 70 + 146 \\ &= 216 \text{ deg. F.} \end{aligned}$$

If a plant were actually designed for this building by the thumb rule method, the heat delivery to the rooms in question would be adjusted partly by damper control and partly by "forcing" the system a little to increase the register air temperature. It can be done. But for the sake of his reputation the

(Continued on page 26)

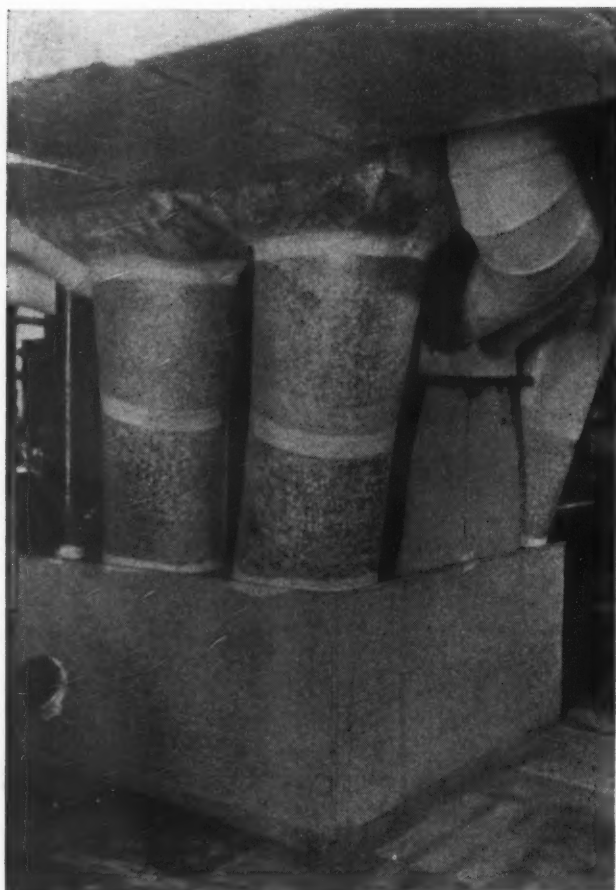
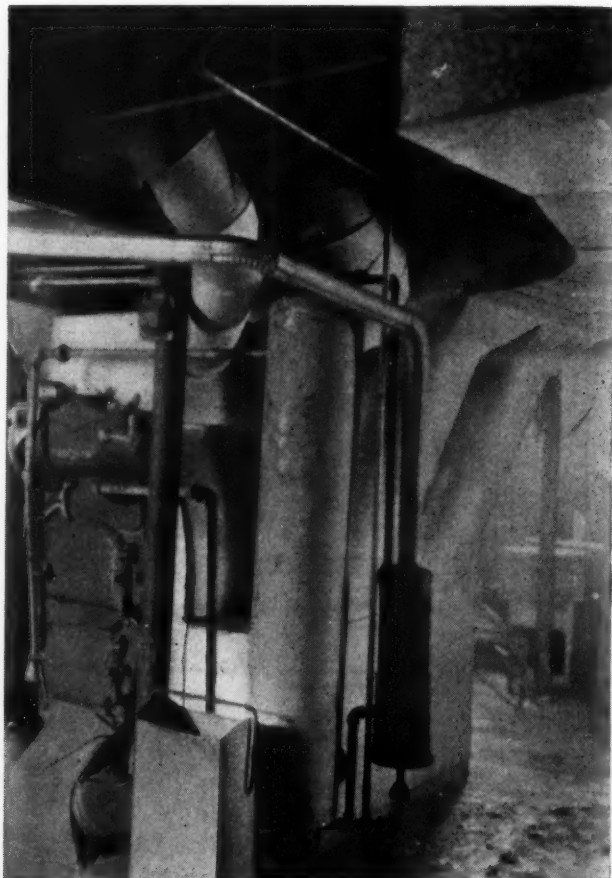
Banks & Coleman's Motto Has Been — GIVE THEM PLENTY OF HEAT

BACK in the days when scientific knowledge of warm air heating wasn't as plentiful as it is today, the wise old-timer always installed a furnace two or more inches oversized. And from this furnace he took leaders also oversized for the room they supplied. The result of this practice is that thousands of these furnaces are still satisfactorily serving their owners, are still in good condition because they didn't have to be forced, and have always kept the house warm.

In Fort Wayne, Indiana, Banks-Coleman Furnace Company has a long record of successful installa-

▲
The furnace was so located that practically every leader is short and direct. It so happened that this location was also between a group of piers forming the least used area of the floor. The furnace used is a FarQuar, the line Banks and Coleman handles

▼



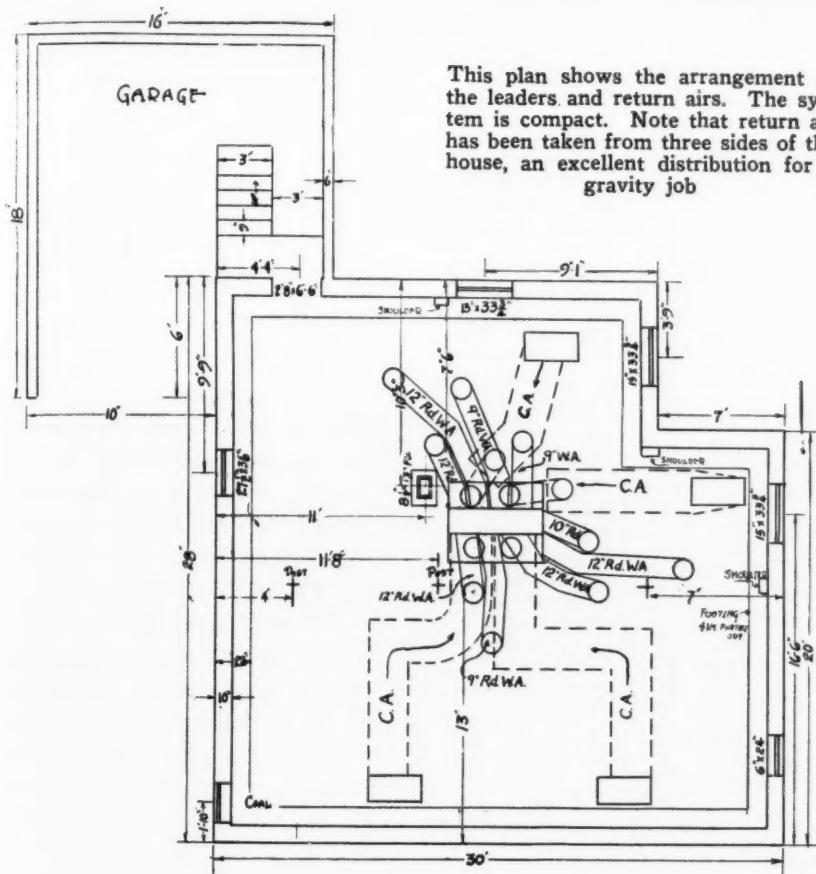
▲
The return air runs are all brought to a central point above the furnace in rectangular ducts. Short round pipes connect these ducts with the cold air shoes which in this case are two boxes on each side of the furnace

▼

tions. Mr. Banks, the senior member of the firm, is a real old-timer, while Mr. Coleman, the junior member grew up in the heating business. This firm has not tried to corner the furnace business of Fort Wayne. In fact, they have been content to do fewer jobs, make a satisfactory profit on each job and do each job just as well as they can.

One of the strictest rules they follow is: Give the customer plenty of heat. And they have found that even though the owner may burn a ton more a year, he is always warm and that is what he wants.

Give the customer plenty of heat is applied to every calculation this firm makes. If a room requires just



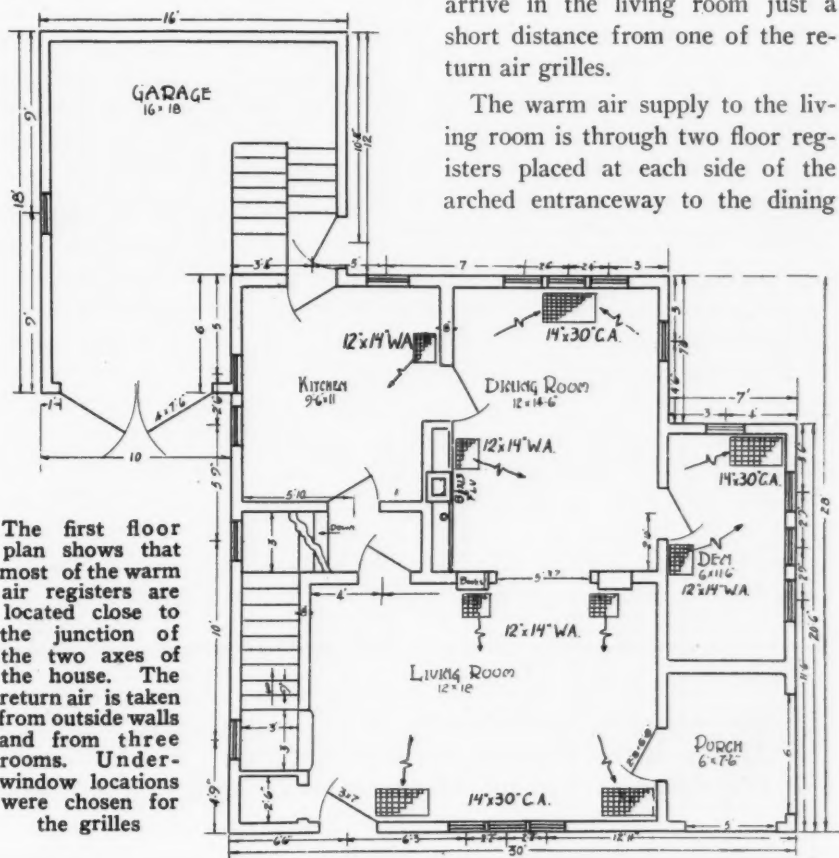
under 9 inches of warm air by Standard Code or B.t.u. figuring they try to use a 10 or 12-inch pipe. If the house demands a 24-inch furnace they try to sell a size larger; perhaps two sizes larger if exposure conditions seem to justify it. Easier firing, plenty of space for several hours' fuel supply are more appreciated than the saving from a furnace which is just a little too small.

This firm, through its long service to the Fort Wayne public, has found that home owners really like such service. Their record of giving satisfaction in heating service sells many jobs for them, for every customer is a Banks-Coleman salesman.

The photographs and the plans shown on these pages illustrate a typical Banks-Coleman installation. The house is owned by a high school professor who designed the house personally and planned the house to be the center of his varied personal interests. One thing he demanded was a satisfactory heating system.

The house stands in an exposed location on the edge of the city.

The house is frame with an exterior of wood shingles. The windows are plentiful and quite large, so that all



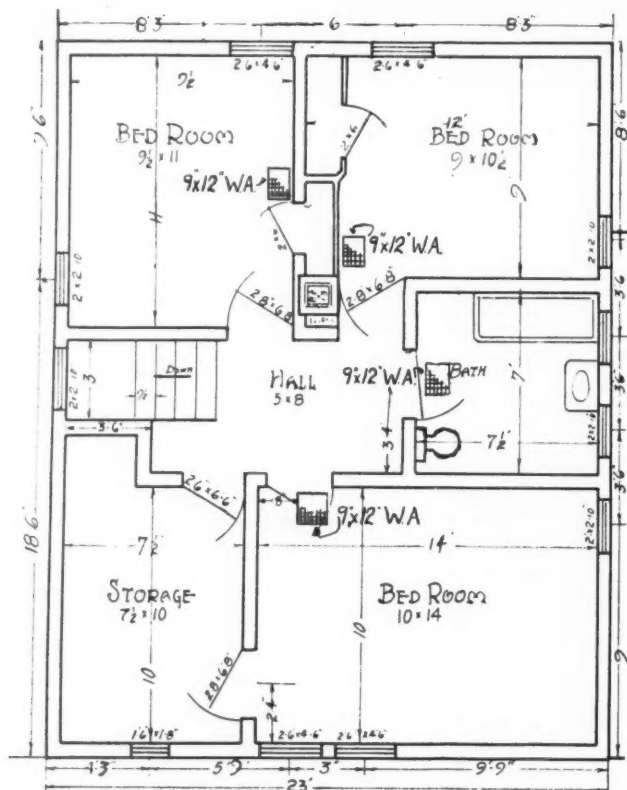
in all the heat loss of the building would be pretty high.

The installation designed by Banks-Coleman consists of a Far-Quar furnace operating on gravity. The bonnet of the furnace was built rectangular and carried up just as high as the basement head room would permit. The leaders are taken off the sides of the bonnet and run with little pitch to the boots.

The furnace was placed just about on the center point of the open basement. It is right against the flue and between three columns on floor area of least use. This central location made it possible to nicely balance the warm air off each side and balance almost as well the return air side of the system.

All the return air for the house is taken from the first floor. Two return grilles are set in the floor of the living room under the outside windows. Another return air is located on the outside wall of the dining room and the den. The second floor has a small central hall into which all rooms open and this hall connects with the stairs which arrive in the living room just a short distance from one of the return air grilles.

The warm air supply to the living room is through two floor registers placed at each side of the arched entranceway to the dining



There are two unusual features of the second floor layout—these are placing of one bedroom and the bath floor register directly in the doorway. This was necessary because of framing timbers which the owner would not permit the contractor to cut. No return air is taken from the second floor directly, but open doors and the stairs are counted on to turn the trick

room. The dining room, kitchen and den are all supplied through

floor registers placed along inside walls.

APPLIED FAN FUNDAMENTALS

(Continued from page 23)

heating contractor should avoid the more or less tricky approximate rules and adhere to fundamentally correct principles until such time at least, as he has acquired sufficient experience with fan systems to enable him to draw on his experience and exercise reasonably sound judgment in applying arbitrary corrections to thumb rule calculations.

Many successful gravity systems were designed in the past by furnace men whose only "rule" was to divide the cubic content of a room by some such factor as 20, and let the quotient represent the number of square inches of leader area that would be required to heat the room.

Such a crude rule could only succeed when the man who applied it, had a sufficiently broad experience to insure that he could increase or decrease the "calculated" pipe area to care for unusual exposure or other conditions affecting the heat load of the room.

Even today, with our accurate and practical Standard Code, we frequently see some of the older and more experienced furnace men using such a simple thumb rule for quick estimating or for roughly checking the results obtained by the more accurate method.

Thumb rules for fan systems may be similarly used for checking purposes or making rough estimates but they should never be depended upon for accurate results.

THE WALDORF-ASTORIA

(Continued from page 13)

in suites having kitchens. In both rooms the standing edge is turned up behind the baseboard.

Because much of the metal was used in simple forms the shop work was comparatively easy. The erection required more time because the metal contractor had to follow the other trades up the building with his floor waterproofing and then with his tower sheathing. The outside work made use of the pipe scaffolding. This all-metal scaffolding is now used exclusively by New York contractors following several sad experiences with fire on wood scaffolds. The scaffold is composed of round galvanized pipes held together by heavy U-clamps.

The response to Platte Overton's engineering service was beyond our expectations. Although the plan was presented without previous publicity, an encouraging number of jobs were sent in. If you want to inquire about some job you have, write to him.

Electric Motor Requirements In Modern Heating [Part IV]

By H. WEICHSEL

Consulting Engineer, Wagner Electric Co., St. Louis

A feature which is essential in all motors is perfectly quiet operation. First of all it is, therefore, essential to design the motor for quiet operation and in some instances it is advisable to mount the motor so as to sound-insulate it against the floor or other member on which it may be mounted.

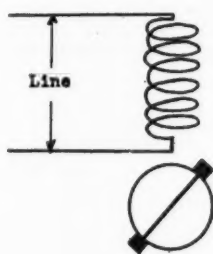
than that of the main winding. The rotor carries a squirrel cage winding.

The split-phase winding on the stator is connected to the line only during starting and produces during the starting period in combination with the main winding an imperfect rotating field. After the ma-

chine has reached a predetermined speed, this winding is disconnected from the line by aid of a centrifugal switch. Machines of this type have a relatively small starting torque and require a relatively large starting current.

A greatly improved type of single-phase motor is the single-phase repulsion induction motor. Machines of this type have only one stator winding. The rotor is provided with a winding similar to that used in d.c. motors and is connected to a commutator. As a rule this commutator is of the vertical construction. Short-circuited brushes ride on the commutator during the starting period. This machine starts as a repulsion motor, and when up to approximately normal speed, the armature is short-

Repulsion Induction Motor



Split-Phase Motor

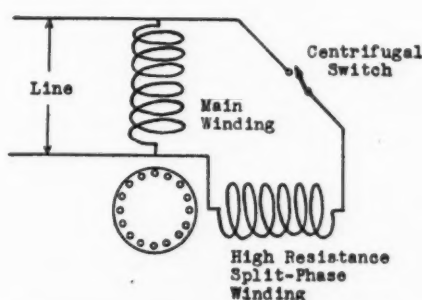


Fig. 59—The split phase motor is the oldest type of single phase induction machine. But an improved type is the single phase, repulsion induction motor. This is the schematic drawing of the winding. The machine starts as a repulsion motor, but when a predetermined speed is reached the armature is short circuited and the motor acts as an induction motor

In the majority of cases, particularly for furnace fans, it is advisable to have the machine totally enclosed so as to protect it against dirt which may be carried by the air which is circulated through the heater and also has the tendency to make the motor quieter.

The oldest type of single-phase motor is the so-called single-phase, split-phase motor which has one main winding on the stator which is connected to the line, and an auxiliary winding displaced against the main winding, and the resistance of the latter circuit is materially higher

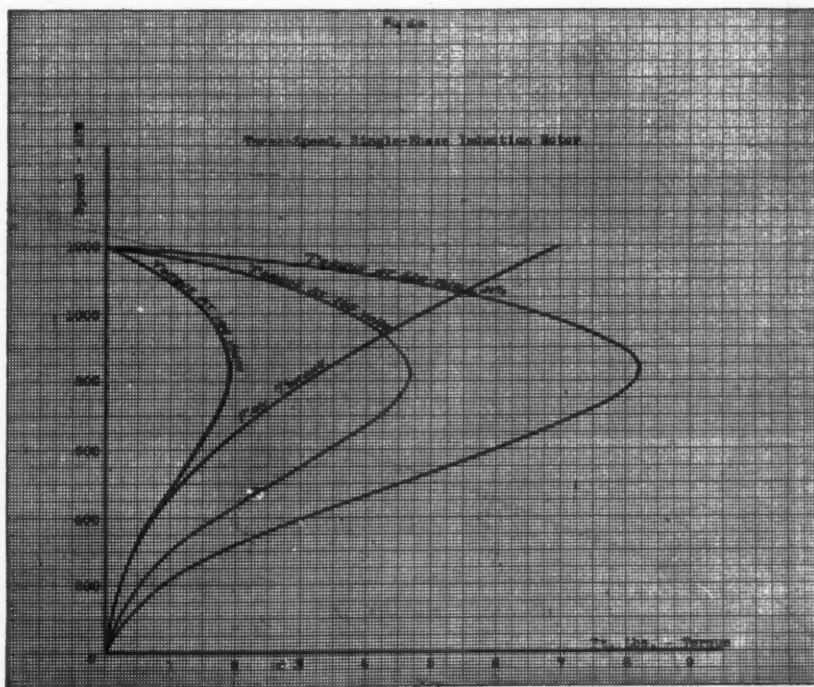


Fig. 60—The speed of the single phase, split phase or single phase repulsion motor cannot be reduced by reducing the voltage on which the motor operates. This chart shows how reduced voltages cause a condition where the motor cannot turn the fan

circuited and the brushes are lifted. The motor now operates as an induction motor, see Fig. 59.

Machines of either one of these types are satisfactory for installations where the fan has to operate at only one definite speed. If an attempt is made, however, to decrease the speed of the machine, for instance, by lowering the voltage on the stator winding, it will be found that very little or no speed regulation is obtainable.

The reason for this is shown in Fig. 60, which gives the speed torque of the machine for full voltage, 75 per cent voltage, and 47 per cent voltage, and also shows the torque required by the blower. It will be seen from this figure that the case assumed gives speeds of 100, 90 and 38 per cent to zero, but the last speed is extremely indefinite, as the speed torque curve of the blower and that of the motor practically coincide. In practice for this condition the motor would come to a standstill.

If the single-phase motors are replaced by polyphase squirrel cage motors, speed torque curves are obtained as shown in Fig. 61. It will be noticed that now the blower torque curve intersects definitely

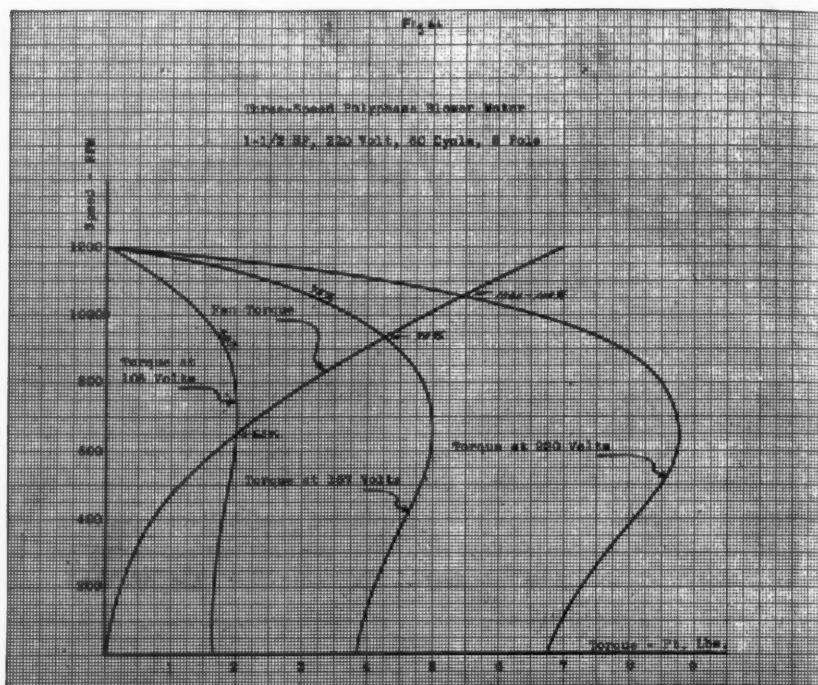


Fig. 61—In the polyphase, squirrel cage motors definite decreases in voltage are accompanied by corresponding decreases in motor speed

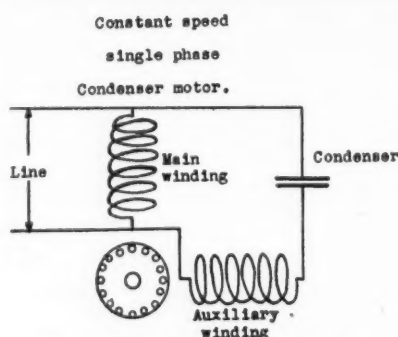


Fig. 62—This is a split phase motor wherein the phase is split by the aid of a condenser

with each of the speed torque curves of the polyphase motors and speed of 100, 90 and 60 per cent or normal speed are obtainable, corresponding to voltages of 100, 75 and 48 per cent.

A condition somewhere between these two extremes—single-phase induction motor and polyphase induction motor—can be obtained by making use of an old arrangement proposed by Steinmetz many years ago consisting of a split-phase motor and splitting the phase by aid of a condenser. Such an arrangement is shown in Fig. 62. It is identical to the standard split-phase motor with the exception that the condenser is connected in series with the auxiliary winding and that the auxiliary stator winding has a relatively low resistance. In the majority of cases, the condenser can be so dimensioned that it can remain in the circuit during starting and running.

A motor of this kind produces speed torque curves such as given in Fig. 63. It will be noticed that the fan torque curve intersects definitely in this example at three different points, corresponding to 100,

(Continued on page 31)

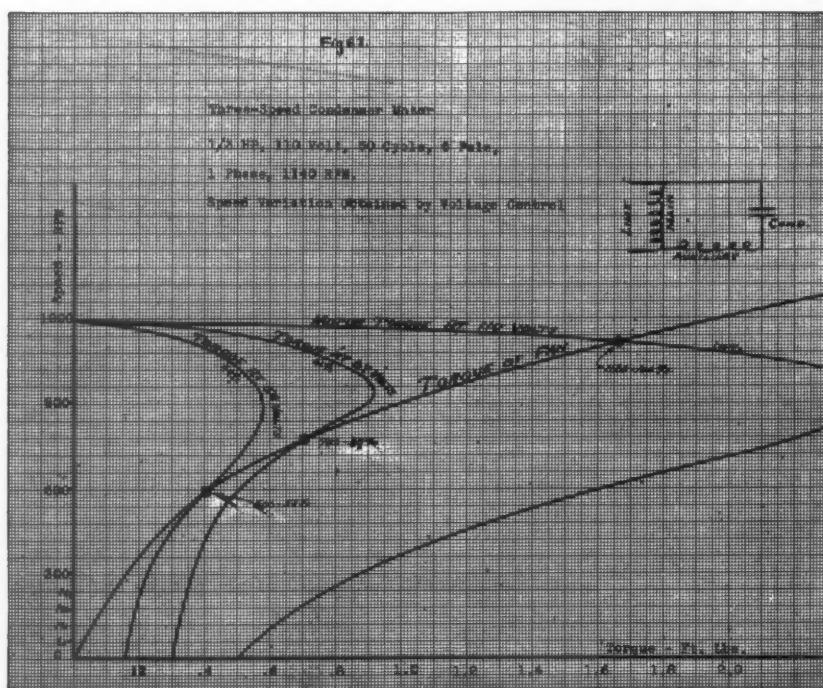
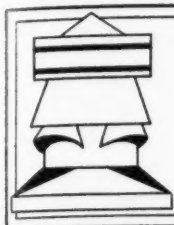


Fig. 63—The motor above gives a plotted operation like this. Definite reductions in speed accompany reductions in voltage, but the starting torque of these motors is less than in polyphase motors



GRAVITY EXHAUST VENTILATION



Ventilator and Pipe Capacities

I ASSUME from your letter that what you are interested in is data for practical use. The questions you bring up are interesting from an academic standpoint, but I believe that it is more practical to approach any given ventilation problem from a somewhat different angle than that indicated by you.

The efficiency, or, in other words, the capacity of a certain type of ventilator on any installation is dependent on so many different factors that it is not practical to attempt to calculate your capacities on the basis of these factors. It might be practical to take some of these factors into consideration if it were not for the fact that they are all so variable.

Take, for instance, the factor you mention of the amount of air an open pipe will exhaust. This will depend on the length of the pipe, the size of the pipe, the shape of the pipe, the number of bends, the character of the bends, the inclusion or absence of sweep, the horizontal runs, the surface of the pipe, the distance of the pipe opening above the roof, the accessibility of the wind and a few other factors which may be definitely determined.

However, the amount of air also will be influenced, perhaps to an even greater degree, by other factors which vary from day to day or even from minute to minute and which for that reason cannot be even roughly estimated. Among these variable

By PAUL R. JORDAN*

414 Bishop St.,
Houston, Texas.

The Paul R. Jordan Co.,
Indianapolis, Ind.

Dear Mr. Jordan:

I am a reader of your frequent articles in the "American Artisan" on ventilators and I should like to get some additional help on the same subject.

I have a set of formulas from the U. S. Bureau of Standards for capacities of different types of ventilators but they are given in proportion to an open pipe. I should like to get a practical formula for the amount of air an open pipe will exhaust. I have one formula for this but the size of pipe is not taken into consideration and therefore it is not practical. Also if you have a table giving the capacities of different types and sizes of ventilators I would like to have one. I should also like to have a formula or a table giving the density of air at different temperatures.

Thanking you very much for your favor, I am,

Respectfully yours,
(Signed) T. E. ROWE.

factors are wind direction, wind velocity, inside temperature at the flue opening, outside temperature at the flue mouth, the amount of intake, the amount of moisture in the exhausted air and other elements such as heavier than air or lighter than air gases

in the exhausted mixture, etc.

Theoretically, an open pipe will not exhaust any air. If it is set in a building under certain conditions air will flow out through it. Under certain conditions air will backdraft down through it. Under certain conditions, air blowing against the mouth in a certain direction will induce an upflow of air. However, if you change the direction of the wind, air will blow down through the same pipe. As wind direction is influenced by all of the objects surrounding the building and also by the roof contour, wind direction changes every few seconds.

The whole thing for practical purposes gets back to the matter of experience. Experience will naturally vary in some degree in different localities, but the variance is not so great as to render impractical general tables based on actual experience. A slight percentage of variance can be discounted by the commonsense of the applier, as based on his own experience and knowledge of his own locality. Conditions are more likely to be unfavorable than favorable, therefore it is safer to increase ventilator sizes than to decrease them.

There are many dependable tables of ventilator capacities published. There have been tables which were not dependable, due to the manufacturers desire to make it appear that their particular devices have phenomenal efficiency. It is safest to base your calculations on the assumption that one make of device is not very greatly different in effi-

*The Paul R. Jordan Co., Indianapolis, Ind.

ciency from another. It is true that some devices based on erratic designing are terribly inefficient. This applies especially to home-made ventilators. In general, well known manufactured and nationally advertised products are reasonably well designed and reasonably efficient.

Most tables are conservative. For instance our tables are based on anemometer tests made over a period of a good many years on actual jobs and in various parts of the United States. They are checked against the experience along the same line of the Indiana State Board of Health and of a number of other state boards.

Now as to capacities of different sizes and types of ventilators. The choice of the types of ventilators is really not based on capacity. It is based on the conditions which are met with and which have to be overcome. According to our tests and experience a good rotary ventilator will pull harder than any other type. Where a hard pull is necessary

TABLE I

Temperature, Deg. Fahr.	Weight per cubic foot, in pounds	Ratio of volume to volume at 70 Deg. Fahr.
-50	0.09690	0.7735
-25	0.09133	0.8206
-10	0.08828	0.8490
0	0.08636	0.8680
10	0.08453	0.8867
20	0.08276	0.9057
30	0.08107	0.9246
40	0.07945	0.9434
50	0.07788	0.9624
60	0.07640	0.9811
70	0.07495	1.0000
80	0.07356	1.0190
90	0.07222	1.0380
100	0.07093	1.0570
200	0.06018	1.2455
300	0.05225	1.4345
400	0.04618	1.6230
500	0.04138	1.8113
1000	0.02720	2.7560

the rotary ventilator is the thing to use. Where conditions are very favorable and all that is needed is something which will keep out weather and let the air out, a storm band ventilator may do it.

On the other hand there are places where due to appearance, locations of high tension wires, or other local conditions, a rotary ventilator is not desired, and greater pulling power is wanted than will be furnished by a storm band type ventilator. Under those

circumstances the siphon type ventilator is the logical answer.

You ask for a table of the density of air at different temperatures. I presume you refer to dry air and I am glad to give you this as follows:* [Table I]

The table of capacities I have before me covers three possible installations, namely, the fan flue where air is pushed to the ventilator; gravity flue, where the intake is restricted, and the open roof installation, where the intake is ample but there is no fan action. Such a table, used in conjunction with a table of recommended air changes per hour will give you a basis to work on. However, it will be advisable for you to get in touch with your ventilator manufacturer for advice on any specific ventilating problem you are called in upon, whenever it is possible for you to do so. If time makes it impossible for you to get your layout from him, you should at least have him check your layout.

*Taken from A. S. H. & V. E. Guide, 1930.

LOCKER ROOM VENTILATION

(Continued from page 21)

by separating the back to back lockers. The ducts then may run behind the lockers to the floor, along the baseboard, thence to fan inlet. Or, ducts may run directly to the ceiling.

Frequently ventilating fans and their motors may be installed on the roof, although basement location is more common in country clubs.

From Fig. 2 it is observed that there is a fresh air system. This is desirable, first, because natural sources of supply air may be impure, second, because the introduction of supply air assists the exhaust and, third, because the supply may be warmed during cool and cold months. Thus the system may be used for heating as well as ventilation during the winter.

If the incoming air is passed through the casing of a warm air furnace prior to being delivered to

the wash and locker rooms the complete system is unexcelled. It becomes a year-round arrangement.



We will publish in the next issue a story about one of the nicest country home automatic heating installations seen in a long time. The system shows how this type of buyer can be interested in forced air when good engineering, good selling, and good workmanship combine to establish confidence

ASSOCIATION ACTIVITIES



Milwaukee Will Hold Picnic August 5, 1931

The Milwaukee local has designated the 5th day of August, 1931, the gala day of the year, for then the annual picnic will be held at Wullf's Island on the Milwaukee River.

Complete arrangements are being made for the event and invitations will be issued in the very near future.

Anyone that attended the previous picnics of this local will know what is in store for them if they attend this year's affair.

Simplified Practice Recommendation on Sheet Steel Reaffirmed

Simplified practice recommendation R28-29 covering sheet steel has been reaffirmed by the standing committee of the industry, without change, for another year, according to an announcement by the division of simplified practice of the Bureau of Standards, Department of Commerce.

This recommendation provides for stock sizes of sheet steel in various gages, and has been instrumental in reducing variety from 1809 sizes to 209, or approximately 88 per cent.

Simplified Practice Recommendation on Roofing Ternes Reaffirmed

Simplified practice recommendation R30-28 on roofing ternes was reaffirmed by the standing committee of the industry at its May, 1931, meeting, without change, for the ensuing six months, according to an announcement of the division of simplified practice of the National Bureau of Standards.

This simplification program establishes weights and thicknesses of roofing ternes, and has been instrumental in reducing the number of stock sizes from 9 to 7, or approximately 22 per cent.

MOTORS IN HEATING

(Continued from page 28)

70 and 50 per cent or normal speed with 100, 67 and 49 per cent voltage impressed. It will be noticed, however, that the starting torques of these machines are less than those of standard polyphase motors.

Committee of Ten Gains Two New Members

Two more national associations were added to the membership of the Committee of Ten—Coal & Heating Industries at the June meeting of the committee, held in Baltimore in conjunction with the annual convention of the National Retail Coal Merchants Association.

The new members are the American Society of Heating & Ventilating Engineers and the Stoker Manufacturers Association. Pending the semi-annual meeting of the American Society of Heating & Ventilating Engineers at Swampscott the latter part of June, E. B. Langenberg of St. Louis has been designated the representative of the society on the committee. The Stoker Manufacturers Association will be represented on the committee by H. H. Kurtz, of the Chicago branch of the Iron Fireman Manufacturing Company, with R. C. Goddard, president of Combustioneer, Inc., of Goshen, Indiana, as alternate.

Roofing and Sheet Metal Conference at Louisville

For the first time in the record of the sheet metal and roofing industries, contractors and dealers specializing in the fabrication, application and installation of roofing and metal products will hold their annual conventions during the same week, January 25, with headquarters at the Brown Hotel, Louisville, Ky.

The general sessions in manufacturing, distributing and contracting will be held during the morning, three days of that week. Fellowship luncheons will be held daily. During the afternoons and at other times that week, round table meetings will be held of the various groups with discussions of intensive problems of special interest within these industries, such as Sheet Metal Work, Asphalt Shingle Roofing and Siding, Built-up and Flat Roofing, Waterproofing and Insulation, Warm Air Heating, Asbestos, Slate and Tile Roofing.

Among the national organizations which will hold their annual conventions at Louisville in 1932, during the week of January 25, are: The National Association of Sheet Metal Contractors, The United Roofing Contractors Association of North American, The Roofing Contractors Division of the National Slate Association.

A. C. Willard Appointed Technical Advisor A. S. H. & V. E.

Here is news for the entire heating and ventilating profession and industry. A new and comprehensive policy developed from the experience of ten years of co-operative research becomes effective immediately.

Centralized control is continued through the chairman of the Committee on Research with the assistance of a technical advisor.

The Director of the Research Laboratory will have charge of all investigations at the society's laboratory in the Bureau of Mines Experiment Station, Pittsburgh.

C. V. Haynes, chairman of the Committee on Research, announces that in line with the policy approved by the committee, Arthur C. Willard, professor of heating and ventilation and head of the Department of Mechanical Engineering in the University of Illinois, has been retained as technical advisor for research.

Twelve problems are being studied at present either at the Research Laboratory in Pittsburgh or at the nine co-operating universities, and other investigations will be undertaken as approved by the Committee on Research as finances permit:

1. Atmospheric dust and air cleaning devices.
2. Air conditions and their relation to living comfort.
3. Physiological effects of atmospheric environment on human beings at work.
4. Heat transmission through building materials.
5. Conductivity studies on concrete.
6. Heat capacity of concrete slabs.
7. Heating effect of the sun on building roofs and walls.
8. Infiltration of air through walls and building openings.
9. Boiler testing with oil fuel and rating of oil burners.
10. Measurement of air flow through registers and grilles.
11. Characteristics of copper tubing for steam and hot water.
12. Performance characteristics of various enclosed types of cast-iron and non-ferrous radiators under actual heating service conditions.

NEW ITEMS and NEWS ITEMS

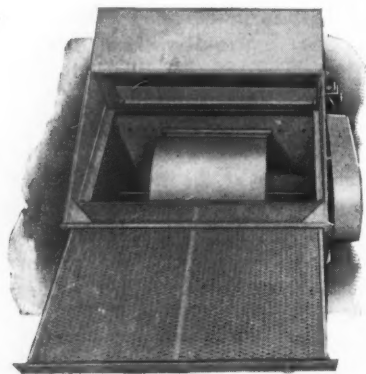
From and about the Manufacturers and Jobbers

Filtered-Aire Blower Introduced by American Fdry. and Furnace Co.

The American Foundry & Furnace Company of Bloomington, Illinois, are putting on the market the Filtered-Aire Blower, a blower which combines in a single unit filters for effectively cleaning the air. The filters used are time-tested, many having been in use for several years, and their efficiency thoroughly proven. The filters are easily cleaned by tapping on the floor and brushing with an electric vacuum cleaner.

The blower is a standard multivane blower, double width and double inlet. It will deliver its rated air volumes positively against resistances encountered in residence heating, either round pipe or rectangular duct work, up to $\frac{3}{8}$ -in. static pressure.

The bearings are located outside of the box and are self-aligning ball bearings.



The pulley has four speeds, making it possible to deliver the rated air volume of the blower against less than $\frac{1}{8}$ -in. static, $\frac{1}{4}$ -in. static, $\frac{1}{2}$ -in. static or $\frac{3}{4}$ -in. static. At top speed the blower is quiet. The bottom is built in as an integral part of the blower, making the entire fan chamber dust tight.

A by-pass damper for gravity operation on coal fired jobs or for gravity operation on constant flame type oil burning jobs is provided. This by-pass damper by-passes both filters and fan for gravity circulation and is furnished only where specified.

A new departure from furnace blower practice is found in the way Filtered-Aire Blowers are rated. The dealer is given definite recommendations of the size blower to use with the different firepot diameter furnaces or in steel furnaces the shell diameter.

New Jersey Zinc Co. Offers "High Grade Sheet Zinc," a New Product

A new high grade sheet zinc of superior bending properties is now being furnished by the New Jersey Zinc Company under the trade name High Grade Sheet Zinc.

According to the announcement made by this company, it is an ideal metal for jobs where the sheet metal worker wants the well known qualities of zinc plus all the advantages of metal which can be bent, seamed and formed—both with the grain and across the grain without fear of cracking.

This new sheet has an exceptionally smooth surface—the result of special rolling of special metal. The new metal is recommended for roofing, cornices, gutters, flashings and other formed articles involving intricate bending and seaming.

The new product is being supplied in all the commercial gauges and sizes, either flat in boxes or rolled in casks.

The New Jersey Zinc Company also announces that there is no increase in the price over that of the regular commercial grades.

Vorys Brothers, Inc., Columbus, Ohio, Moves Offices

Vorys Brothers, Inc., sheet metal distributors of Columbus, Ohio, announce removal of their offices and warehouse to a new location, 79 East Goodale Street, corner of Kerr Street, Columbus, Ohio. The new building is strategically laid out to handle the sheet metal man's requirements most efficiently and economically.

The company handles Armco Ingot Iron, Revere Copper and Brass, Enduro K A 2 stainless iron sheet, Mueller and Armstrong Furnaces.

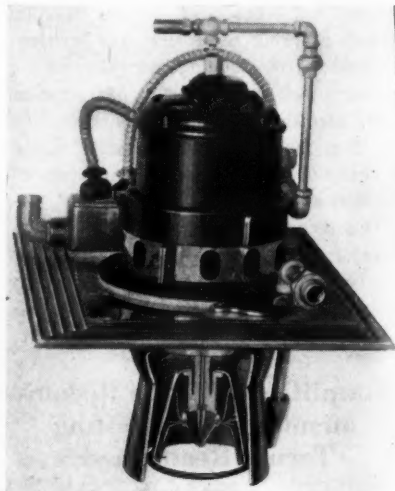
Tuttle & Bailey Move to Larger Quarters

The Tuttle & Bailey Mfg. Co., Inc., manufacturers of registers and grilles, have removed their New York office from 441 Lexington Avenue to the Commerce Building, 155 East Forty-fourth Street. The company will occupy larger and more commodious quarters at the new address, in order to better serve and handle this large and growing trade.

Cope-Swift Corp. Introduces a New Model Improved Burner

Construction details of a new model Cope-Swift oil burner show changes to make the burner even more simple, silent and efficient.

The outstanding feature of the new model is the atomizing of the oil by heat and centrifugal force combined. The oil comes through the shaft against a cone heated by exposure to the flame. Cracking is started by the heat and the oil passes backward through a nozzle. Centrifugal force then spreads the oil around the inner walls of the first cup, from which it is thrown to the second. Here a still thinner layer is struck by hot



gasses which are drawn through the third cup. As it is thrown in the form of a mist or fog from the edge of the cup, it is picked up and projected into the flame by the air current driven through the outer housing by the fan.

The unit includes the Triplex cup, the motor and the fan, all mounted on the single hollow shaft, is the only moving part of the burner. The motor assembly is mounted on a cast iron plate to be attached to the ash pit door frame, patented rib-sections permitting it to be quickly fitted to any size opening.

The Cope-Swift burner has full standard electric automatic controls. Present equipment is with mercoid solenoid electric oil valve, stack safety control, room thermostat and pressure safety control, all operated on a standard 110-volt circuit.

"Bill" Laffin Proud Father of Second Boy

From far off Los Angeles word has filtered that "Bill" Laffin is the proud father of another boy. This one, so the report goes, has a regular mop of black hair exceeding in abundance any his father ever had and no doubt ever will have. "Bill" Laffin will be remembered by hundreds of his friends in the furnace industry from his years of service with Tuttle and Bailey and later with Charles Johnson Company.

The youngster was born June 12. His name—John Charles. Mrs. Laffin, who was and is almost as widely known as "Bill," is reported doing nicely. Bill's home address these days is 352 North Croft Avenue, Los Angeles. He isn't in the furnace business so far as we know.

Lakeside Will Distribute Independent Air Filters

The Independent Air Filter Company, Chicago, has arranged with the Lakeside Company of Hermansville, Michigan, for the distribution of their air filters to the warm air heating industry. The arrangement is national in scope, but covers only such portion of the Independent line as is sold to dealers, jobbers and manufacturers of warm air heating equipment. The Independent Air Filter Company will continue as previously to market their standard products in the field of general ventilation and industrial applications.

The Independent sales organization deals largely with architects, engineers and contractors in the building industry and direct with industrial plants. The warm air industry is therefore somewhat foreign to their regular activities. The Lakeside Company specializes in this field and has an active national sales organization for the marketing of their "Furblo" line of blowers and other specialties. This keeps them in close contact with every possible outlet for air filters in that field.

The Independent line covers a wide range of types and sizes, but the most popular seller will be marketed by Lakeside under the trade name of "V-M," a filter using a replaceable filler composed of a special reinforced cotton fabric.

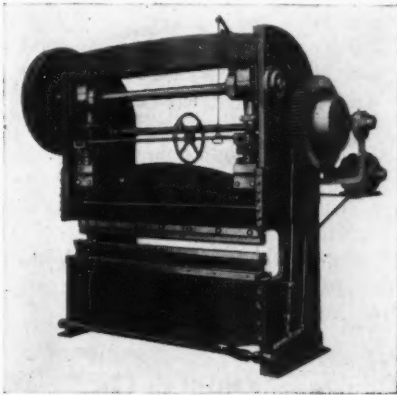
Pittston Stove Co. Buys Lehigh Patterns

The Pittston Stove Company, Pittston, Pennsylvania, announces they have purchased the entire line of "Lehigh" patterns comprising stoves, ranges, and furnaces. The company is now ready to fill orders for repair and replacement parts. The address of the company is Post Office Box 29, Pittston, Pennsylvania.

Dreis & Krump's New Light Type Press

The illustration shows the new Light Type Press Brake now being made by the Dreis & Krump Mfg. Co. This Light Type Press has been designed to fill a definite need in the production of many sheet metal products, including stoves, ranges, refrigerators, soda fountains, furniture and a great variety of sheet metal specialties.

These machines are built entirely of steel, arc welded. The gear wheel is also made of welded steel section. The housings are one piece with deep gap which



allows work longer than die length to be passed through machine from left to right.

These machines are being made in four capacities, and in lengths from 3 ft. to 8 ft. Literature covering same will be sent to anyone interested.

Dail Steel Products New Air Conditioner

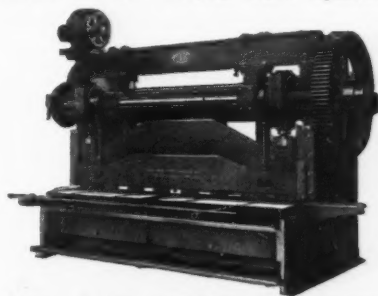
Announcement was made in a recent issue that the Dail Steel Products Company of Lansing, Michigan, had taken over the manufacture and distribution of a special oil and gas burning furnace that has been under development for the past two years by C. I. Murdock of Ann Arbor, Michigan. Since taking over this product, several new improvements and refinements have been made.

The Dail Steel Products Company now announce another development which they have perfected. A Sirroc type blower mounted on a frame built up from the floor is enclosed within the casing and on top of the furnace. The entire frame is set on rubber pads and the shaft has wood bearings so the operation is practically noiseless. An air washer is attached to each side of the casing and the cold air return connected with this air washer.

Complete catalog and specifications are now ready for dealers distribution and may be obtained by addressing the Dail Steel Products Company, Lansing, Michigan.

New Pexto Welded Steel Squaring Shear

The Peck Stow and Wilcox Company, Southington, Conn., now have ready for contractors and manufacturers a new welded steel squaring



shear of the overhead driven power type. Several features are listed for this new machine.

The new machine will cut soft steel in thicknesses from 3/16 to 1/2 inch. All members subjected to heavy tension or bending stresses are of welded steel construction. Cuts of from 72 to 168 inches can be made.

Complete details, literature and prices may be obtained from the manufacturer.

New Sheer Electric Gas Valve No. 31-A

The H. M. Sheer Company, Quincy, Illinois, announces a new electric motor-driven gas valve for use on low pressure gas firing equipment.

This valve is designated as the "Sheer Type 31-A," and consists of a small induction motor used in conjunction with a relay, the relay automatically holding the gear mechanism in an open position after the valve is



moved toward the open position by the electric motor. By this construction the wattage consumption is considerably lower, since the usual wattage is consumed for only 1 1/2 seconds (while the valve is open), then only 6 watts is used to hold the valve open after the relay engages. No power is consumed by the valve when closing or when closed. A 2-wire circuit is employed.

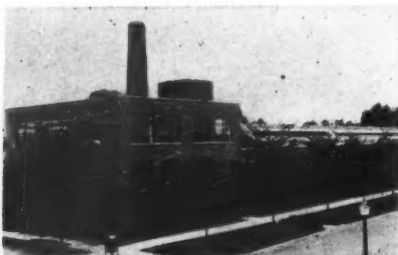
The Shur Type 31-A valve is furnished in 3-in., 1-in., 1 1/4-in. and 1 1/2-in.

Literature describing the valve and prices may be obtained from the manufacturer.

Kester Solder Co. Proud of Model Factory

An interesting news release received recently calls attention of the plant of the Kester Solder Company, manufacturers of self-fluxing Kester Solder.

This model plant is located on Wrightwood Avenue in Chicago, the buildings occupying an entire block.



The grounds surrounding the buildings are beautifully landscaped, and since the nearest neighboring factories are several blocks away, there is nothing to keep the sun-light from streaming into every office and plant building through wide and almost ceiling-high windows.

Richardson & Boynton Open Northwest Territory

Announcement is made of the appointment of the Stark-Davis Company, 118 Fourth St., Portland, Oregon, as wholesale distributors in the Northwestern territory, for Richardson & Boynton Company, New York, manufacturers of "Richardson" and "Perfect" Heating and Cooking Apparatus since 1837.

Large supplies of the latest R. & B. products will be maintained for immediate shipment from Portland stock and every dealer in the territory has been advised of this convenient source of supply.

The company is confident that this new distribution service will be a tremendous boon to every dealer in the Northwest.

Ryerson Purchases the Reed-Smith Co. of Milwaukee

In 1924 Joseph T. Ryerson & Son, Inc., purchased the interest of W. J. Reed and others in the Reed-Smith Company of Milwaukee, Wisconsin. Now the Ryerson Company has purchased the remaining stock and the firm becomes the Reed-Smith plant of Joseph T. Ryerson & Son of Wisconsin, Inc.

The Reed-Smith Company has been outstanding in its steel service to the Milwaukee industrial area. This new move will add further strength to the Ryerson Company's chain of warehouses located in ten principal steel-consuming areas of the country.

American Furnace Company New Gas Furnaces

American Furnace Company, 2719 Morgan Street, St. Louis, Mo., is now manufacturing a complete new line of gas furnaces to be known as the Thermo Warm Air Gas Heat—The System of Greatest Utility.

The line comprises small one section units, multiple section units, deluxe units for air conditioning, and both floor and ceiling industrial heating units.

The Thermo furnaces have a new type combustion unit made of cast iron and assembled from two sections, surface ground and bolted together.

The small unit occupies only $4\frac{1}{2}$ square feet of floor area. All units have a bright red lacquered casing.

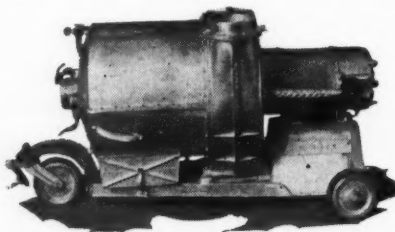
The deluxe line has complete equipment for air conditioning consisting of centrifugal blowers—one blower for each section—dry filters, blower bonnet control and house thermostat.

Complete literature on the equipment, prices and details may be secured from the manufacturer.

Densmore-Quinlan Co. New Suction Cleaner

The Densmore-Quinlan Company of Kenosha, Wisconsin, announce the introduction of a new portable suction cleaner for the heating industry. This cleaner weighs 75 pounds and can be operated by one man. Handles are attached for carrying and the machine runs on three wheels, one of which is swiveled.

The machine will operate on either A.C. or D.C. current of 110 to 125 volts. The cleaner is compact, requiring only $16\frac{1}{2}$ by 36 inches of floor area. The machine is built of the best quality cast aluminum. S. K. F. bearings are used throughout. The motor is a G.E. hooked



to a fan of special design. The fan and motor are so designed that dirt and oil cannot work through. Every machine is guaranteed against defective or broken parts for one year.

The cleaner will be sold with complete cleaning attachments. These include a special brush for warm air pipes, a flat brush for cold air lines, a corner brush for registers, an outside brush for pipes, a radiator scratch brush, brush for boiler pipes, scaling tubes and both a 2- and $1\frac{1}{2}$ -in. hose.

Young Ventilating Co. New Regulator

The Young Ventilating Company, 2703 Wodland Avenue, Cleveland, Ohio, announces a new positive ventilating control, the Young Regulator, which controls the volume of air flowing through a ventilation duct by opening or closing a damper with which it is connected by a $\frac{3}{8}$ -inch square bar. A special indicator



and dial show accurately the position of the camper in the duct.

The damper is set by operating two nuts on the shaft. The outer nut, which is eight sided, controls the adjustment of the damper. The outer nut, which is ten sided and larger, locks the regulator at any desired position. Placing this lock nut on the inside makes it difficult to turn with any ordinary wrench.

A special two ended wrench to fit both nuts comes with the regulator. The regulator is made of guaranteed rust proof material and may be had in chrome nickel or any other desired finish.

E. B. Langenberg Opens Engineering Office

Due to an upheaval of minority stockholders, E. B. Langenberg has severed his active connection with the Langenberg Manufacturing Co. and has opened an office in St. Louis under the name of "E-B" Engineering Company.

The new company will furnish complete designs for air heating systems, including all necessary appurtenances thereto.

This service is to be available to manufacturers, dealers and architects in such a way that they can serve their trade in a new way.

For the manufacturer, it will save salesmen's time, engineering and drafting personnel.

To the architect, it will give a service not available at the present time and will enable him to secure bids on a single design.

The dealer will be able to supply his customers with up-to-date design and blue prints at nominal cost.

E. B. Langenberg has over twenty-six years' experience in the installation field.



IF YOU'RE WISE
YOU'LL WRITE
FOR THESE

BOOKS



EXPLAINING

The
WISE
BALANCED
BIG-3 LINE

WISE
20
SERIES

WISE
GAS FIRED

WISE
40
SERIES

THE WISE FURNACE COMPANY

Akron, Ohio

WISE DEALERS SELL WISE FURNACES

Your Most Productive Dollar



IS in the super suction cleaner because you get more than a machine; you get a well-rounded business and a Plan Book which makes it pay from the start. You get a complete supply of direct advertising printed with your name, address, phone; also prospect cards.

Dealers say that our right start is worth more than they pay for the machine. What good is a cleaner without the best plan to work it?

Get the new bag, three times the former size; suction stronger than ever; cleaner removes from base, to go up stairs to registers; the safety trap which protects the fan from heavy objects if sucked in; the metal container which empties soot like a coal scuttle; tools for all places; 50 ft. of best cord; a speedy, one-man outfit; the first price covers it all.

The National Super Service Company
1944 North 13th Street, Toledo, Ohio

Without obligation, send me the free PLAN BOOK which helps sell new furnaces and repairs, and tell me how I can try the cleaner free.

Name _____

Street _____

City _____ State _____

Say you saw it in AMERICAN ARTISAN—Thank you!



THE ROAD TO PROFIT



MR. FURNACE DEALER can not be found in making counterfeit money, passing rubber checks, or selling **BOOTLEG STEEL FURNACES** (a product sold promiscuously under various brands other than the manufacturers name).

The emotional spree of mass production, ten year guarantee, and selling bootleg steel furnaces is over.

Now it will take hard-headed, two fisted, He-men, and sober business methods to make profits, and they must sell a real **HE-MAN** furnace that sells on something more than a wobbly 10 year guarantee.

Hook up to Peerless for 1931. You can always outsell the Bootleg Steel Furnace competition.

THE PEERLESS FOUNDRY COMPANY

Pioneers in Warm Air Heating Since 1895

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THE RIVAL!



EAVES TROUGH HANGER

A heavy, easily adjusted hanger made in four sizes, 4", 4½", 5" and 6", and of copper or galvanized iron. Each hanger is subjected to a most rigid inspection so that uniform quality is assured at all times.

They are shipped in compact heavy corrugated cardboard cartons.

If you are interested in rigid construction, quick, easy adjustment, sure locked bead, and low price, then order The "Rival."

Sold By Leading Jobbers

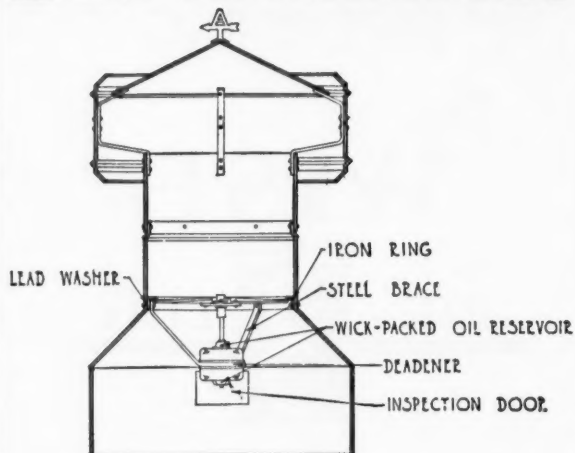
BERGER BROS. CO.
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WRITE
FOR OUR
CATALOG

JORDAN AERO VENTILATION

F-DIRECT CONNECTED-FAN VENTILATOR



A Unit for greater efficiency.
Combining gravity, ventilator and fan action.
Eliminating wind and weather hazard.

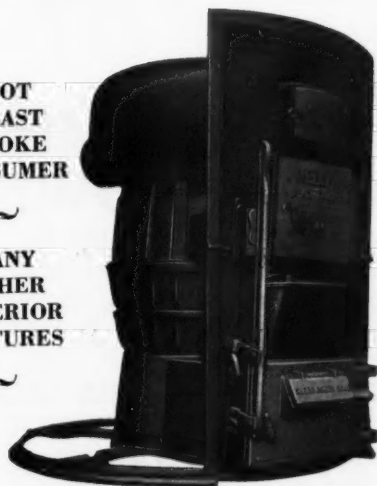
Backed by a complete engineering service

PAUL R. JORDAN & CO.
630 South Delaware St. Indianapolis, Ind.

*"America's
perfect heating
unit"*

HOT
BLAST
SMOKE
CONSUMER

MANY
OTHER
SUPERIOR
FEATURES



DUPLIX
GRATE

DISC
GROUND
DOORS

WAST
HIGH
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The 1931 MELLOW FURNACE

Write for the 1931
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LIBERTY FOUNDRY CO.
7600 Vulcan Street St. Louis, Mo.

THE "BIG THREE" IN AIR CONDITIONING

SILENTAIR FAN
(Blower Type)
SILENTAIR AIR WASHER
SILENTAIR AIR FILTER

Write for Literature

SILENTAIR

AIR CONDITIONING UNITS

Manufactured by

A. GEHRI & CO.
Tacoma, Washington

DISTRIBUTORS IN ALL PRINCIPAL CITIES

NEW LOW PRICE!



NOW More Than Ever The Best "Buy" on the Market . . .



Compare the H & C point by point with any or all heat controls available.

For efficiency there's nothing at any price that surpasses it. Structurally, no other gives more complete assurance of freedom from servicing. It's the kind of product that gives lasting satisfaction, that builds good will for you, and nets you an absolutely clean profit on every sale. Then take into consideration the new low price and you are bound to agree that no other Heat Control gives you the opportunity to cash in on this market on so sound and profitable a basis.

[Stocked by leading jobbers every-
where. Literature gladly furnished]

\$ **24.50**
DEALER PRICE

Including Every
Necessary Fitting.
Sells for \$45.00 plus
installation.



HART & COOLEY MFG. CO.

General Sales Office

61 WEST KINZIE ST.

CHICAGO, ILL.

Say you saw it in AMERICAN ARTISAN—Thank you!

THE Fast SELLER *in the furnace field*

Year after year—for over a quarter century—Rybolt Dealers have been making big money selling and installing Rybolt Furnaces.

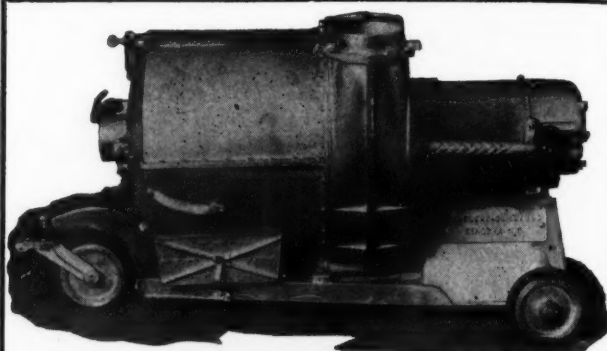
Now the Rybolt offers bigger opportunities than ever. High quality, known dependability, a one-piece radiator of uniform thickness with smoke and cleanout collars cast on, and many other features of construction, make it the outstanding value in the furnace field.

The complete details will be mailed upon request. Why not write or wire for them now?

THE RYBOLT HEATER COMPANY
Ashland, Ohio Cincinnati Indianapolis



RYBOLT FURNACE



CLEANING POWER

That's what we offer with a "D. Q." Cleaner. Power to perform quickly and satisfactorily. That "Extra Power" which puts a profit in your pocket.

THE "D. Q." CLEANER IS LIGHT IN WEIGHT, BUT POWERFUL IN PERFORMANCE



Fully guaranteed and operates on any ordinary house current A.C. or D.C. 110 to 125 Volts.

Densmore-Quinlan Co.
Kenosha Wisconsin

Write for This Illustrated Folder for Full "D.Q." Data

File This Copy

When you have finished reading this issue of AMERICAN ARTISAN, pass it on to others in your organization, marking the articles in which they should be particularly interested.

Then file it for future reference. You never know when you will encounter a problem in your business that is covered in this very issue.

Miters
Demand
"Champion" Miters
and Fittings
from your
Jobber!

Braden
MANUFACTURING
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PRODUCTS

Mention AMERICAN ARTISAN in your reply—Thank you!



MAGNIFY A BRILLION FURNACE 200 TIMES

That will tell you why we
have adopted the
"LECTROMELT"
PROCESS

BUT—Better still, let us send you folder No. 10E, which explains this process fully and gives detailed information about the Brillion line. WRITE

BRILLION FURNACE CO.
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YOUNG REGULATOR

**A Locking and Indicating
Device for Air Conditioning
and Ventilating Systems**

Controls the volume of air flow through duct—the simplest and most effective method of controlling and showing position of volume damper. Positively tamperproof. Made of rust-resisting metals. Exclusive patented features. Write for catalog.



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GOHI SHEETS

**For Every
Purpose**

It is the Pure Iron alloyed with the right amount of Copper that gives GOHI SHEETS their lasting and rust-resisting qualities. Developed and manufactured exclusively by

THE NEWPORT ROLLING MILL COMPANY
NEWPORT, KENTUCKY



Have You Received Your Copy?

A new catalogue describing and illustrating in color the sensational new line of Thermo Gas Furnaces is just off the press and is being mailed as fast as requests can be handled. Have you written for your copy? If not, do so at once as the dealer in each territory who applies first will have an important sales advantage.

The Thermo line of Gas Furnaces includes a furnace for every type of domestic or business building and each with important Thermo features that place them years in advance of the field.

If you are anxious to build a successful business in this fast growing market, investigate the Thermo line without delay.

*Cut Out This Ad and Pin
to Your Letterhead*

AMERICAN FURNACE CO.
2719-31 Morgan Street
St. Louis, Mo.

A. A.

Say you saw it in AMERICAN ARTISAN—Thank you!

GET ACQUAINTED

With Our
REPAIR PART SERVICE



We Furnish Repairs for
**Furnaces, Stoves
and Ranges**
From Our Stock

← Write for This Order Book

A. G. BRAUER SUPPLY COMPANY
314-318 North Third Street St. Louis, Mo.

KORECTAIRE

The CORRECT AIR MACHINE

for COOLING

Do you realize that hundreds of dealers are making big profits selling blowers and fans on the basis of Home Cooling during the summer as well as Forced Heat in winter. They are, and "KORECTAIRE" is ideal for such sales. It is a positive blower—it humidifies the air and cleans it.

Write for full details today
The KORECTAIRE is the most quiet blower on the market—it is the easiest to install—it lends itself to any number of cold air returns. Ask for illustrated circulars and prices now.

MONCRIEF**Pipe
and Fittings**

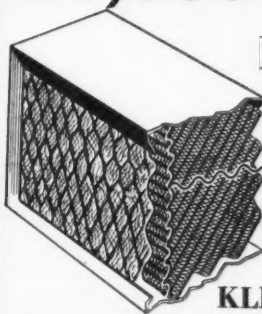
We supply everything used on a warm air heating job. Send for our big Pipe and Fittings Book.

The Henry Furnace & Foundry Co.

3471 East 49th Street
Cleveland, Ohio

20,500

SQUARE INCHES OF
FILTERING AREA IS
BUILT INTO EACH

**KLEENAIRE
FILTER UNIT**

This is why they are more efficient.

There are many other superior features of design. All Metal—Non-Matting.

Write for Details

KLEENAIRE FILTER CO.

Stevens Point, Wis.



The "Torrid" Furnace is designed to give a tremendous amount of heat, much more than that furnished by the ordinary tinner's furnace.

A fuel saver and generating machine of the finest quality made at the price.

GEO. W. DIENER MFG. CO.

404 North Monticello Ave.

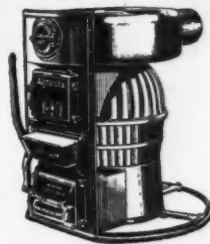
Chicago

**Genuine
Agricola****REPAIR PARTS**

To be sure of perfect fitting castings and parts, order only genuine AGRICOLA Repair Parts. Prompt shipments.

AGRICOLA FURNACE CO., Inc.
Gadsden, Alabama

Offices in principal cities

**REGISTERS OF THE HOUR****AUER Quality Merchandise
Is Your Satisfaction**

There is an AUER Register and Grille for every need—the Colonial, Aueristocrat, Economy, and Pro-Tex-Wall—but the catalog will tell you better. Write for it today.

AUER REGISTER COMPANY

3608 Payne Avenue

CLEVELAND, OHIO

Boost Profit with This Heat Booster

LET US TELL YOU HOW—

And Send You Our Catalog and
Name of Nearest Jobber

A.-C. Mfg. Company, 417 Sherman St., Pontiac, Ill.

"American Seal"**FURNACE CEMENT**

**Roof Cement—Stove Putty
Plumbers Putty**

PAINTS AND SPECIALTIES

WILLIAM CONNORS PAINT MFG. CO.

Established 1852

TROY

NEW YORK

JAMES L. PERKINS, Western Distributor
140 South Dearborn Street, Chicago, Illinois

**The AUTOMATIC DRIP
HUMIDIFIER**

Entirely Different
Write for Details

Correct and Controlled Humidity

THE Automatic Drip Humidifier is unlike all others. The amount of humidity desired is regulated. It is simple, fool-proof, durable, reliable and high grade in every respect.

For every warm air heating installation and especially desirable with oil heat because of control feature.

For efficiency and profits sell the Automatic Drip Humidifier—send for complete information today.

AUTOMATIC HUMIDIFIER COMPANY
CEDAR FALLS, IOWA

Say you saw it in AMERICAN ARTISAN—Thank you!

~ MARKET QUOTATIONS ~

AMERICAN ARTISAN is the only publication quoting Prices on Metals, Sheet Metal Equipment and Supplies, Warm Air Heating Supplies and Accessories, corrected bi-weekly. These quotations are not guaranteed but are obtained from reliable sources and reflect nation-wide market conditions at the time of going to press.

NOTE—These prices are Chicago Warehouse Prices to which must be added territory differentials

METALS

PIG IRON

Chicago Fdy., No. 2.....	\$17.50
Southern Fdy., No. 2.....	17.01
Lake Superior Charcoal.....	27.04
Malleable.....	17.50

FIRST QUALITY BRIGHT CHARCOAL TIN PLATES

IC 20x28 112 sheets.....	\$23.80
IX 20x28 40-lb. 112 sheets.....	27.45
IXX 20x28 25-lb. 112 sheets.....	14.95
IXXX 20x28 16-lb. 112 sheets.....	16.10
IXXXX 20x28.....	17.35

TERNE PLATES

	Per Box
IC 20x28, 40-lb. 112 sheets.....	\$23.50
IX 20x28, 40-lb. 112 sheets.....	26.00
IX 20x28, 25-lb. 112 sheets.....	20.05
IX 20x28, 25-lb. 112 sheets.....	22.90
IX 20x28, 20-lb. 112 sheets.....	14.55
IV 20x28, 20-lb. 112 sheets.....	21.35

"ARMCO" INGOT IRON PLATES

No. 8 ga.—110 lbs.....	\$4.15
3/16 in.—100 lbs.....	4.05
1/4 in.—100 lbs.....	3.85

COKE PLATES

Cokes, 80 lbs., base, 20x28.....	\$12.00
Cokes, 90 lbs., base, 20x28.....	12.20
Cokes, 100 lbs., base, 20x28.....	13.75
Cokes, 107 lbs., base, IC, 20x28.....	12.75
Cokes, 135 lbs., base, IX, 20x28.....	14.75
Cokes, 155 lbs., base, 2X, 56 sheets.....	8.50
Cokes, 175 lbs., base, 3X, 56 sheets.....	9.35
Cokes, 195 lbs., base, 4X, 56 sheets.....	10.25

BLUE ANNEALED SHEETS

Base 10 ga.....per 100 lbs.	\$3.35
"Armco" 10 ga.....per 100 lbs.	4.15

ONE PASS COLD ROLLED BLACK

No. 18-20.....per 100 lbs.	\$3.55
No. 22.....per 100 lbs.	3.70
No. 24.....per 100 lbs.	3.75
No. 26.....per 100 lbs.	3.85
No. 27.....per 100 lbs.	3.90
No. 28.....per 100 lbs.	4.00

GALVANIZED

No. 16.....per 100 lbs.	\$3.85
No. 18.....per 100 lbs.	4.00
No. 20.....per 100 lbs.	4.15
No. 22.....per 100 lbs.	4.20
(Standard differentials on extras to apply)	
No. 24.....per 100 lbs.	\$4.35
No. 26.....per 100 lbs.	4.60
No. 27.....per 100 lbs.	4.70
No. 28.....per 100 lbs.	4.85
"Armco" 24.....per 100 lbs.	5.85

BAR SOLDER

Warranted 50-50.....per 100 lbs.	\$19.25
45-55.....per 100 lbs.	17.00
48-52.....per 100 lbs.	17.75
Plumbers'.....per 100 lbs.	15.50

ZINC

In Slabs.....	\$5.00
---------------	--------

SHEET ZINC

Cask Lots (600 lbs.).....	\$12.00
Sheet Lots (100 lbs.).....	13.00

BRASS

Sheets, Chicago base.....	16 1/2 c
Tubing, braz'd, Chicago base.....	24 1/2 c
Tubing, seamless, Chicago base.....	21 1/2 c
Wire, Chicago base.....	16 c
Rods, Chicago base.....	18 1/2 c

COPPER

Sheets, Chicago base.....	18 1/2 c
Tubing, seamless, Chicago base.....	21 1/2 c
Wire, plain rd., 8 B. & S. Ga. and heavier.....	12 1/2 c

LEAD

American Pig.....	\$6.00
Bar.....	7.50

TIN

Bar Tin.....per 100 lbs.	\$33.00
Pig Tin.....per 100 lbs.	32.00

SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES

ASBESTOS

Paper up to 1/16.....	5c per lb.
Roll board.....	5 1/2 c per lb.
Mill board, 3/32 to 1/4.....	5 1/2 c per lb.
Corrugated paper (250 sq. ft. per roll).....	\$4.00 per roll

ASBESTOS SEGMENTS

8 in.....per 25 sets	\$1.85
9 in.....per 25 sets	2.10
10 in.....per 25 sets	2.35
12 in.....per 25 sets	2.65

CEMENT FURNACE

5-lb. cans, net.....	\$0.40
10-lb. cans, net.....	0.80
25-lb. cans, net.....	2.00
Per 100 lbs.....	7.50

CLIPS

Damper	
No-Rivet Steel, with tail pieces, per gross.....	\$9.50
Rivet Steel, with tail pieces, per gross.....	7.50
Tail pieces, per gross.....	2.40

COPPER FOOTING

Copper Footing.....	43 %
---------------------	------

CORNICE BRAKES

Chicago Steel Bending	
Nos. 1 to 6B.....	Net

CUT-OFFS

Gal. plain, round or cor. rd.	
26 gauge.....	30 %
28 gauge.....	35 %

DAMPERS

Yankee Warm Air	
7 inch, doz.....	\$1.60
8 inch, doz.....	2.20
9 inch, doz.....	2.60
10 inch, doz.....	2.80
12 inch, doz.....	3.50
14 inch, doz.....	5.00

EAVES TROUGH

Galv. Crimpedge, crated.....	75-15 %
Zinc.....	60 %

ELBOWS

Conductor Pipe	
Galv. plain or corrugated, round at Crimp.....	
28 gauge.....	60-10 %
26 gauge.....	50 %
24 gauge.....	15 %

Galvanized Terne Steel

Plain Rd. and Rd. Corr.	
28 gauge.....	60-10 %
26 gauge.....	50 %
24 gauge.....	15 %

Square Corrugated

28 gauge.....	55 %
26 gauge.....	40 %

Portico Elbows

Standard Gauge Conductor Pipe, plain or corrugated.	
Not nested.....	70 & 5 %
Nested solid.....	70 & 5 %

Sq. Corr., A. & B. & Octagon

28 gauge.....	55 %
26 gauge.....	40 %

Portico

1, 1 1/4, 1 1/2 inch.....	45 %
---------------------------	------

Copper

16 oz., all designs.....	50 %
--------------------------	------

Zinc

All styles.....	60 %
-----------------	------

ELBOWS—Stove Pipe

1-piece Corrugated, Uniform Blue	
No. 28 Gauge.....	Doz.
5 inch.....	\$1.15
6 inch.....	1.25
7 inch.....	1.75

Adjustable—Uniform Blue

No. 28 Gauge, Uniform Blue.	
5 inch.....	\$1.60
6 inch.....	1.75
7 inch.....	2.10

WOOD FACES—60 % off list.

FIRE POTS

No. 02 Gasoline Torch, 1 qt.....	Each \$ 5.13
No. 9250, Kerosene or Gasoline Torch, 1 qt.....	6.50
No. 10 Tinner's Furnace Square tank, 1 gal.....	11.20
No. 15 Tinner's Furnace Round tank, 1 gal.....	10.70
No. 21 Gas Soldering Furnace.....	8.00
No. 110 Automatic Gas Soldering Furnace.....	10.50

GLASS

Single and Double Strength, A, all brackets.....	85 %
Single and Double Strength, B, all brackets.....	87 %

HANGERS

Conductor Pipe	
Milcor Perfection Wire.....	25 %
Milcor Triplex Wire.....	10 %

Eaves Trough

Steel (galv. after forming), from list.....	45 %
Selflock E. T. Wire, List.....	10 %

HOOKS

Conductor	
"Direct Drive" Wrought Iron, for wood or brick.....	15 %

MITRES

Galvanized Steel Mitres	
28 gauge.....	70-15 %
26 gauge.....	70-5 %

PASTE

Asbestos Dry Paste

200-lb. barrel.....	\$14.00
100-lb. barrel.....	7.50
50-lb. pail.....	4.25
25-lb. pail.....	2.15
10-lb. bag.....	1.00
5-lb. bag.....	0.50

PIPE

Galvanized	
Crated and nested (all gauges).....	75-12 1/2 %
Crated and not nested (all gauges).....	75-7 1/2 %

Furnace Pipe

Double Wall Pipe and Fittings.....	60 %
Single Wall Pipe, Round Galvanized Pipe.....	60 %
Galvanized and Tin Fittings.....	60 %

Lead

Per 100 lbs.....	\$12.50
Store Pipe	
"Milcor" "Titelock" Uniform Blue Stove	
28 gauge, 5 inch U. C. nested.....	\$10.00
28 gauge, 6 inch U. C. nested.....	11.00
28 gauge, 7 inch U. C. nested.....	13.00
30 gauge, 5 inch U. C. nested.....	9.25
30 gauge, 6 inch U. C. nested.....	10.00
30 gauge, 7 inch U. C. nested.....	12.00

T-Joint Made Up

6-inch, 28 gauge.....per doz.	\$3.40
-------------------------------	--------

REGISTERS AND FACES

Steel Registers	
Steel and Semi-Steel.....	40 & 10 %
All Cast Iron.....	20 %

Baseboard

2-Piece.....	40 & 10 %
1-Piece.....	40-10 & 20 %

Adjustable Ventilators

Adjustable Ventilators.....	40 & 10 %
-----------------------------	-----------

COLD AIR FACES

Steel and Cast, less than 14" width.....	40 & 10 %
Steel, 14" and wider.....	65 & 10 %
Cast, 14" and wider.....	60 & 10 %
Special Cold Air Faces, Steel or Cast.....	40 & 10 %

RIDGE ROLL

Galv. Plain Ridge Roll, b'd'd.....	75-15-5 %
Galv. Plain Ridge Roll, crated.....	75-15 %

SCREWS

Sheet Metal	
7. 1/2 x 1/4, D.P. GROSS.....	\$0.52
No. 10, 3/8 x 1/8, per gross.....	0.68
No. 14, 1/2 x 1/4, per gross.....	0.83

SHEARS, TINNERS' AND MACHINISTS'

Viking.....	\$22.00
Lennox Throatless	
No. 18.....	35 %
Shear blades.....	10 %
(F.o.b. Marshalltown, Iowa)	

SHOES

Galv. 28 Gauge, Plain or Corrugated, round flat crimp.....	60-10 %
26 gauge, round flat crimp.....	50 %
24 gauge, round flat crimp.....	15 %

SNIPS

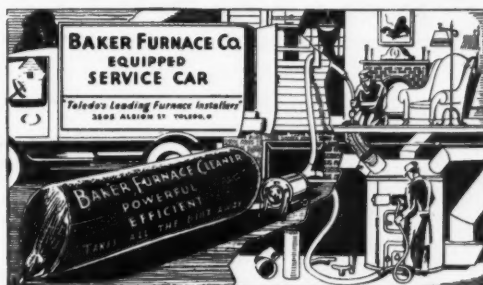
Tinners'.....	Net
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VENTILATORS

Standard.....	30 to 40 %
Milcor.....	Net

HERE'S HOW TO MAKE SUMMER PROFITS

Furnace cleanings lead to repairs and replacements which run into many dollars. Outside of the profit made on the cleaning job many dollars are found from these necessary repairs and replacements. Invest a few dollars in a real furnace cleaner. It will put you in for big profits.

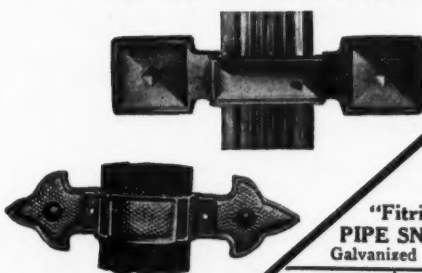


The BAKER Furnace Cleaner is the cleaner you have been looking for—the cleaner with the extra big bag—portable, easy to handle, efficient in operation. You can obtain the BAKER Furnace Cleaner at the unusually low price of \$234. You can use the BAKER Furnace Cleaner for five days to prove its value and efficiency. Let us tell you about the BAKER Cleaner and the free offer we make progressive dealers.

BAKER FURNACE CO., 2507 Albion Street, Toledo, Ohio

RIVAL STRAP CORP. 308 WEST 20th ST. NEW YORK, N. Y.

THE RIVAL AND FITRITE One-Piece Ornamental Leader Straps



Made in six styles. Write for folder showing complete line and sizes. STRAPS SOLD THROUGH JOBBERS ONLY

"Fitrite" Adjustable
PIPE SNOW GUARDS
Galvanized Iron or Bronze



Type "X"

"FITRITE" Bronze
ROOF STRAINERS
3 Types. For Roofs having inside cast iron leader. Type "X" (illustrated) also made in Malleable Iron



"FITRITE"
Mop Heads and
Staples
Malleable Iron

"FITRITE" SKYLIGHT GEARING

Iron or
Bronze
3/4"-3 1/2" & 1"
Sizes



Made also
for chain
operation

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Telephone: CHelsea 3-2400

DAVID LEVOW 308 WEST 20th ST. NEW YORK



A SIMPLE ILLUSTRATION

*"Note the FINS
on any air-cooled motor"*

**"FINS" on a Furnace
serve the same purpose**

The Fins simply radiate and throw off the heat, giving additional radiation, more economical fuel consumption and more certain heating satisfaction. A most simple, yet efficient improvement.

**Only One Furnace
Offers "FINNED Heating"
Satisfaction and Economy**

"HALL-NEAL VICTOR"

The Victor is backed by a most unusual dealer franchise. Let us tell you about it.

HALL-NEAL FURNACE COMPANY
1324 Capitol Avenue Indianapolis, Indiana

HEAT RADIATING FINS

VARIABLE SPEED MOTOR DRIVEN VENTILATORS

Burt Engineers have again increased the effectiveness and widened the range of uses for the Burt Fan Ventilator by the application of variable speed motors. It is now possible to obtain high speed, low speed or gravity ventilation by using this ventilator. Full details giving speed ranges and sizes will be sent on request.

The BURT MFG. Co.

Ventilators-Oil Filters-Exhaust Heads

930 S. High St., Akron, Ohio



BURT Fan
Ventilator

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BUYERS' DIRECTORY

Air Cleaners

American Fdy. & Furnace Co.,
Bloomington, Ill.
Independent Air Filter Co.,
Chicago, Ill.
Kleenaire Filter Co.,
Stevens Point, Wis.
Meyer & Bro., F.,
Peoria, Ill.
Watt Mfg. Co.,
Sterling, Ill.

Air Washers

American Machine Products Co.,
Marshalltown, Iowa
Brundage Co.,
Kalamazoo, Mich.
A. Gehrl & Co.,
Tacoma, Wash.
Watt Mfg. Co.,
Sterling, Ill.

Asbestos—Liquid

Technical Products Co., Pittsburgh, Pa.

Asbestos Covering

Standard Asbestos Co. of Chicago,
Chicago, Ill.
Wilson, Grant, Inc.,
Chicago, Ill.

Asbestos Paper

Standard Asbestos Co. of Chicago,
Chicago, Ill.
Wilson, Grant, Inc.,
Chicago, Ill.

Ash Sifter

Diener Mfg. Co., G. W., Chicago, Ill.

Blast Gates

Berger Bros. Co., Philadelphia, Pa.

Blowers

American Fdy. & Furnace Co.,
Bloomington, Ill.
American Machine Products Co.,
Marshalltown, Iowa
Brundage Co.,
Kalamazoo, Mich.
Emerson Elec. Mfg. Co.,
St. Louis, Mo.
A. Gehrl & Co.,
Tacoma, Wash.
Henry Furnace & Fdy. Co.,
Cleveland, Ohio
Lakeside Co.,
Hermansville, Mich.
Watt Mfg. Co.,
Sterling, Ill.

Bolts—Stove

Ryerson & Son, Inc., Jos. T.,
Chgo., N. Y., St. L., Det., Cleve.

Brakes—Bending

Dreis & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.
Peck, Stow & Wilcox Co.,
Southington, Conn.
Ryerson, & Son, Inc., Jos. T.,
Chgo., N. Y., St. L., Det., Cleve.

Brakes—Cornice

Dreis & Krump Mfg. Co., Chicago, Ill.

Brass and Copper

American Brass Co., Waterbury, Conn.
Revere Copper and Brass Inc.,
Rome, N. Y.

Cans—Garbage

Diener Mfg. Co., G. W., Chicago, Ill.
Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

Castings—Malleable

Fanner Mfg. Co., Cleveland, Ohio

Ceilings—Metal

Globe Iron Roofing and Corrugating
Co.,
Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Chaplets

Fanner Mfg. Co., Cleveland, Ohio

Cleaners—Vacuum

Baker Furnace Co., Toledo, O.
Breuer Electric Mfg. Co.,
Chicago
Brillion Furnace Co.,
Brillion, Wis.
Densmore & Quinlan Co.,
Kenosha, Wis.
National Super Service Co.,
Toledo, Ohio
Osborn Co., The J. M. & L. A.,
Cleveland, Ohio

Conductor Elbows and Shoes

Barnes Metal Products Co.,
Chicago, Ill.
Berger Bros. Co.,
Philadelphia
Globe Iron Roofing & Corrugating Co.,
Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Conductor Fittings

Barnes Metal Products Co.,
Chicago, Ill.
Berger Bros. Co.,
Philadelphia, Pa.
Braden Mfg. Co.,
Terre Haute, Ind.
Globe Iron Roofing & Corrugating Co.,
Cincinnati, Ohio
David Levow,
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Rival Strap Corp.,
New York, N. Y.

Conductor Pipe

Barnes Metal Products Co.,
Chicago, Ill.
Berger Bros. Co.,
Philadelphia, Pa.
Globe Iron Roofing & Corrugating Co.,
Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Copper

American Brass Co., Waterbury, Conn.
Revere Copper and Brass Inc.,
Rome, N. Y.

Cornices

Globe Iron Roofing & Corrugating Co.,
Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Crimping Machines

Bertsch & Co., Cambridge City, Ind.
Yoder Co., The,
Cleveland, Ohio

Cut-offs—Rain Water

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Dampers—Quadrants—Accessories

Aeolus Dickinson,
Chicago, Ill.
Hart & Cooley Co.,
Holland, Mich.
Howes Co., S. M.,
Boston, Mass.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp.,
New York, N. Y.
Young Ventilating Co.,
Cleveland, Ohio

Dampproofings

Lastik Products Corp., Pittsburgh, Pa.

Diffusers—Air Duct

Aeolus Dickinson,
Chicago, Ill.

Drills—Electric

J. M. & L. A. Osborn Co.,
Cleveland, Ohio

Drive Screws—Hardened Metallic

Parker-Kalon Corp.,
New York

Eaves Trough

Barnes Metal Products Co.,
Chicago, Ill.
Berger Bros. Co.,
Philadelphia, Pa.
Globe Iron Roofing & Corrugating Co.,
Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Eaves Trough Hangers

Berger Bros. Co.,
Philadelphia, Pa.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Fluxes—Soldering

Kester Solder Co.,
Chicago, Ill.
Ryerson, & Son, Inc., Jos. T.,
Chgo., N. Y., St. L., Det., Cleve.

Forming Rolls

Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

Furnace Cement

Connors Paint Mfg. Co., Wm.,
Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Technical Products Co., Pittsburgh, Pa.

Furnace Chain

Hart & Cooley Co.,
Holland, Mich.

Furnace Cleaners—Suction

Baker Furnace Co., Toledo, O.
Breuer Electric Mfg. Co.,
Chicago
Brillion Furnace Co.,
Brillion, Wis.
Densmore & Quinlan Co.,
Kenosha, Wis.
National Super Service Co.,
Toledo, Ohio
J. M. & L. A. Osborn Co.,
Cleveland, Ohio

Furnace Door Handles

Fanner Mfg. Co.,
Cleveland, Ohio

Furnace Fans

A-C Mfg. Co.,
Pontiac, Ill.
American Fdy. & Furnace Co.,
Bloomington, Ill.
Robinson Co., A. H.,
Massillon, Ohio

Furnace Filters

Independent Air Filter Co.,
Chicago, Ill.
Kleenaire Filter Co.,
Stevens Point, Wis.

Furnace Pipe and Fittings

Henry Furnace & Fdy. Co.,
Cleveland, Ohio
Meyer & Bro., F.,
Peoria, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A.,
Cleveland, Ohio
Peerless Foundry Co.,
Indianapolis, Ind.

Furnace Pokers

Fanner Mfg. Co.,
Cleveland, Ohio

Furnace Pulleys

Hart & Cooley Co.,
Holland, Mich.

Furnace Regulators

Hart & Cooley Co.,
Holland, Mich.
Modern Heat Regulator Co.,
Cleveland, Ohio
Minneapolis Honeywell Regulator Co.,
Minneapolis, Minn.
White Mfg. Co.,
Minneapolis, Minn.

Furnace Rings

Forest City Foundries Co.,
Cleveland, Ohio

Furnaces for Gas or Oil

Dall Steel Products Co., Lansing, Mich.

Furnaces—Gas

American Fdy. & Furnace Co.,
Bloomington, Ill.
American Furnace Co.,
St. Louis, Mo.
Henry Furnace and Foundry Co.,
Cleveland, Ohio
Lennox Furnace Co.,
Marshalltown, Iowa
Meyer Furnace Co.,
Peoria, Ill.
Robinson Co., A. H.,
Massillon, Ohio
Wise Furnace Co.,
Akron, Ohio
Western Steel Products Co.,
Duluth, Minn.

Furnaces—Gas Auxiliary

Forest City Foundries Co.,
Cleveland, O.

Furnaces—Oil Burning

Motor Wheel Corp., Heater Div.,
Lansing, Mich.

Furnaces—Warm Air

Agricola Furnace Co., Gadsden, Ala.
American Fdy. & Furnace Co.,
Bloomington, Ill.
American Furnace Co., St. Louis, Mo.
Armstrong Furnace Co., Columbus, O.
Brillion Furnace Co., Brillion, Wis.
Dall Steel Products Co., Lansing, Mich.
Deshler Foundry & Machine Works,
Deshler, Ohio
Enterprise Boiler & Tank Works,
Chicago, Ill.
Forest City Foundries Co.,
Cleveland, Ohio
General Heating Co., St. Paul, Minn.
Graff Furnace Co.,
Scranton, Pa.
Hall-Neal Furnace Co.,
Indianapolis, Ind.
Henry Furnace & Fdy. Co.,
Cleveland, Ohio
International Heater Co.,
Utica, N. Y.
Lennox Furnace Co.,
Marshalltown, Iowa
Liberty Foundry Co., St. Louis, Mo.
May Fieberger Furnace Co.,
Newark, Ohio
Meyer Furnace Co., The, Peoria, Ill.
Midland Furnace Co., Columbus, Ohio
Motor Wheel Corp., Heater Div.,
Lansing, Mich.
Mt. Vernon Furnace & Mfg. Co.,
Mt. Vernon, Ill.
Peerless Foundry Co.,
Indianapolis, Ind.
Premier Warm Air Heater Co.,
Dowagiac, Mich.
Rybolt Heater Co.,
Ashland, Ohio
Schwab Furnace & Mfg. Co.,
Cedar Grove, Wis.
Standard Fdy. & Furnace Co.,
De Kalb, Ill.
U. S. Furnace Co.,
Youngstown, Ohio
Waterman-Waterbury Co.,
Minneapolis, Minn.
Western Steel Products Co.,
Duluth, Minn.
Williamson Heater Co.,
Cincinnati, O.
Wise Furnace Co.,
Akron, Ohio

Grilles

Auer Register Co.,
Cleveland, Ohio
Chicago Perforating Co.,
Chicago
Harrington & King Perforating Co.,
Chicago, Ill.
Hart & Cooley Co.,
New Britain, Conn.
Independent Register & Mfg. Co.,
Cleveland
Tuttle & Bailey Mfg. Co.,
New York
U. S. Register Co.,
Battle Creek, Mich.

Guards—Machine and Belt

Harrington & King Perforating Co.,
Chicago, Ill.

Handles—Boiler

Berger Bros. Co.,
Philadelphia, Pa.

Handles—Soldering Iron

Parker-Kalon Corp., New York, N. Y.

Heat Regulators

Hart & Cooley Co.,
Holland, Mich.
Modern Heat Regulator Co.,
Cleveland, Ohio
Minneapolis-Honeywell Regulator Co.,
Minneapolis, Minn.
White Mfg. Co.,
Minneapolis, Minn.

Heaters—Cabinet

Motor Wheel Corp., Heater Division,
Lansing, Mich.
Mt. Vernon Furnace & Mfg. Co.,
Mt. Vernon, Ill.
Waterman-Waterbury Co.,
Minneapolis, Minn.

Heaters—School Room

Meyer Furnace Co., The, Peoria, Ill.
Western Steel Products Co.,
Duluth, Minn.
Waterman-Waterbury Co.,
Minneapolis, Minn.

Humidifiers

Automatic Humidifier Co.,
Cedar Falls, Iowa
Diener Mfg. Co., G. W.,
Chicago, Ill.
Meyer & Bro. Co., F.,
Peoria, Ill.
Sallada Mfg. Co.,
Minneapolis, Minn.

(Continued on page 46)

AIR CONDITIONING

is the biggest thing in the furnace industry today. Find out what WEIR is doing about it.

THE MEYER FURNACE CO.

Peoria

Illinois

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SHEETS

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WAMPUM BRAND
FURNACE CEMENT



LASTIK PRODUCTS CO., INC.
OLIVER BUILDING - PITTSBURGH, PA.

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Guaranteed for 10 Years

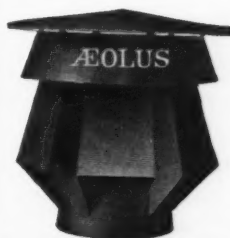
PREMIER
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(Cast Iron)

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1931
Catalog

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Improved
VENTILATORS



FOR industrial buildings,
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Made in 14 different metals.
Constant ventilation—no noise
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Industrial Division of Paul Dickinson,
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COLD AIR FACES

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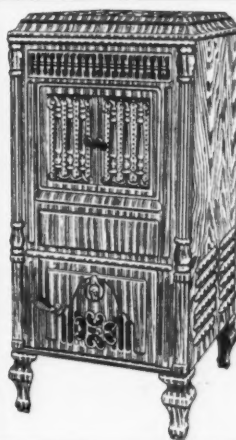
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The

Vernois
Super Heater

A handsome addition to the home that radiates and circulates the heat.

A powerful heater that is unconditionally guaranteed for three years.

MT. VERNON
FURNACE & MFG. CO.
Mt. Vernon Illinois

BUYERS' DIRECTORY

(Continued from page 44)

Machinery—Culvert

Bertsch & Co., Cambridge City, Ind.
Interstate Machinery Co., Chicago, Ill.

Machinery—Rebuilt

Interstate Machinery Co., Chicago, Ill.

Machines—Tinsmith's

Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Yoder Co., The, Cleveland, O.

Metal Lath—Expanded

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Miters

Barnes Metal Products Co., Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Braden Mfg. Co., Terre Haute, Ind.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Nails—Hardened Masonry

Parker-Kalon Corp., New York, N. Y.

Oil Burners

Rock Oil Burner Corp., Madison, Wis.
McVaine Burner Corp., Evanston, Ill.
Northern Oil Burners Inc., Minneapolis, Minn.
Silent Automatic Corp., Detroit, Mich.

Paint

Connors Paint Mfg. Co., Wm., Troy, N. Y.

Perforated Metals

Chicago Perforating Co., Chicago
Harrington & King Perforating Co., Chicago, Ill.

Punches

Bertsch & Co., Cambridge City, Ind.
Hyro Mfg. Co., New York, N. Y.
Interstate Machinery Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
W. A. Whitney Mfg. Co., Rockford, Ill.

Punches—Combination Bench and Hand

Parker-Kalon Corp., New York, N. Y.

Punches—Hand

Parker-Kalon Corp., New York, N. Y.
W. A. Whitney Mfg. Co., Rockford, Ill.

Putty-Stove

Connors Paint Mfg. Co., Wm., Troy, N. Y.

Radiator Cabinets

Hart & Cooley Co., New Britain, Conn.
Tuttle & Bailey Mfg. Co., New York

Registers—Warm Air

Auer Register Co., Cleveland, Ohio
Forest City Foundries Co., Cleveland, Ohio
Hart & Cooley Co., Holland, Mich.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Register & Mfg. Co., Cleveland, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Rock Island Register Co., Rock Island, Ill.
Symonds Register Co., St. Louis, Mo.
Tuttle & Bailey Mfg. Co., New York
United States Register Co.,
Battle Creek, Mich.

Registers—Wood

American Wood Register Co., Plymouth, Ind.
Auer Register Co., Cleveland, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Repairs—Stove and Furnace

Brauer Supply Co., A. G., St. Louis, Mo.

Ridging

Globe Iron Roofing & Corrugating Co., Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Roofing Cement

Connors Paint Mfg. Co., Wm., Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.

Roof Flashing

Globe Iron Roofing and Corrugating Co., Cincinnati, Ohio
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Roof Paints

Connors Paint Mfg. Co., Wm., Troy, N. Y.
Lastik Products Corp., Pittsburgh, Pa.

Roofing—Iron and Steel

Globe Iron Roofing and Corrugating Co., Cincinnati, Ohio
Inland Steel Co., Chicago, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Newport Rolling Mill Co., The, Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Roofing—Tin and Terne

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Rubbish Burners

Hart & Cooley Co., Holland, Mich.

School—Sheet Metal Pattern Drafting

St. Louis Technical Institute,
St. Louis, Mo.

Schools—Warm Air Heating

St. Louis Technical Institute,
St. Louis, Mo.

Screws—Hardened Metallic Drive

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp.,
200 Varick St., New York

Screws—Hardened Self-Tapping, Sheet Metal

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Parker-Kalon Corp., New York

Screens—Perforated Metal

Harrington & King Perforating Co., Chicago, Ill.

Scuppers

Aeolus Dickinson, Chicago, Ill.

Shears—Hand and Power

Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
Viking Shear Co., Erie, Pa.
Yoder Co., The, Cleveland, O.

Sheet Metal Screws—Hardened, Self-Tapping

Parker-Kalon Corp., New York

Sheets—Alloy

Inland Steel Co., Chicago, Ill.
International Nickel Co., New York, N. Y.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Aluminum

J. M. & L. A. Osborn Co., Cleveland, Ohio

Sheets—Black and Galvanized

Inland Steel Co., Chicago, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Copper

American Brass Co., Waterbury, Conn.
Revere Copper and Brass Inc., Rome, N. Y.

Sheets—Iron

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Sheets—Copper Bearing Steel

Inland Steel Co., Chicago, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio

Sheets—Nickel

International Nickel Co., New York

Sheets—Pure Iron Copper Alloy

Newport Rolling Mill Co., Newport, Ky.

Sheets—Special Finish

Inland Steel Co., Chicago, Ill.
Newport Rolling Mill Co., Newport, Ky.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Republic Steel Corp., Youngstown, Ohio

Shingles and Tiles—Metal

Globe Iron Roofing and Corrugated Co., Cincinnati, O.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Sky Lights

Globe Iron Roofing and Corrugated Co., Cincinnati, O.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Snips

Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Snow Guards

Berger Bros. Co., Philadelphia, Pa.
David Levow, New York, N. Y.
Rival Strap Corp., New York, N. Y.

Solder

Kester Solder Co., Chicago, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Solder—Acid Core

Kester Solder Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Solder—Rosin Core

Kester Solder Co., Chicago, Ill.

Solder—Self-Fluxing

Kester Solder Co., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Soldering Furnaces

Diener Mfg. Co., G. W., Chicago, Ill.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Specialties—Hardware

Diener Mfg. Co., G. W., Chicago, Ill.

Stars—Hard Iron Cleaning

Fanner Mfg. Co., Cleveland, Ohio

Stove Pipe and Fittings

Meyer & Bro. Co., F., Peoria, Ill.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Stove and Furnace Trimmings

Fanner Mfg. Co., Cleveland, Ohio

Strainers—Roof

David Levow, New York, N. Y.
Rival Strap Corp., New York, N. Y.

Straps—Ornamental Pipe

David Levow, New York, N. Y.
Rival Strap Corp., New York, N. Y.

Tinplate

Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.
Osborn Co., The J. M. & L. A., Cleveland, Ohio

Tools—Tinsmith's

Bertsch & Co., Cambridge City, Ind.
Dreis & Krump Mfg. Co., Chicago, Ill.
Interstate Machinery Co., Chicago, Ill.
Marshalltown Mfg. Co., Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Parker-Kalon Corp., New York, N. Y.
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.
The Stanley Electric Tool Co., New Britain, Conn.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.

Torches

Diener Mfg. Co., G. W., Chicago, Ill.
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Ryerson & Son, Inc., Jos. T., Chgo., N. Y., St. L., Det., Cleve.

Vacuum Cleaners—Furnace

Baker Furnace Co., Toledo, O.
Breuer Electric Mfg. Co., Chicago
Brillion Furnace Co., Brillion, Wis.
Densmore & Quinlan Co., Kenosha, Wis.
National Super Service Co., Toledo, Ohio
J. M. & L. A. Osborn Co., Cleveland, Ohio

Ventilators—Ceiling

Hart & Cooley Co., New Britain, Conn.
Henry Furnace & Fdy. Co., Cleveland, Ohio
Independent Reg. & Mfg. Co., Cleveland, O.

Ventilators—Floor

Aeolus Dickinson, Chicago, Ill.

Ventilators—Roof

Aeolus Dickinson, Chicago, Ill.
Berger Bros. Co., Philadelphia, Pa.
Burt Mfg. Co., Akron, O.
Paul R. Jordan & Co., Indianapolis, Ind.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

Wood Faces—Warm Air

Auer Register Co., Cleveland, Ohio
American Wood Register Co., Plymouth, Ind.
Milcor Steel Co.,
Mil., Canton, Chgo., La Crosse, K. C.

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ADOPTED AS STANDARD EQUIPMENT
By Many Furnace Manufacturers

SIMPLEX HUMIDIFIER

TRULY NO EASY TO
AUTOMATIC FLOAT INSTALL



WRITE
for Proposition

SALLADA MFG. CO.
720 South 4th Street

Minneapolis, Minn.

WIRE DROP HANDLES for FURNACE DOORS



Furnished Nickel Plated in Following
Lengths:

2 5/8" - 3 1/8" - 3 3/8" - 4 1/2" - 5 1/2"

We also manufacture a complete line of
Furnace and Stove Trimmings—such as
Pokers, Lifters, Scrapers, Shovels, Cranks,
Shakers, Lever Handles, Turnkeys, Knobs,
Air Mixers, Register Screws, Gas Stove
Fittings, Valve Wheels, Furnace Regu-
lators, etc.

Write for Samples and Prices

THE FANNER MFG. COMPANY

Brookside Park CLEVELAND, OHIO

You can now heat with fresh air as economi-
cally as with recirculated air—and better.

FRESH-AIRE HEATING SYSTEM

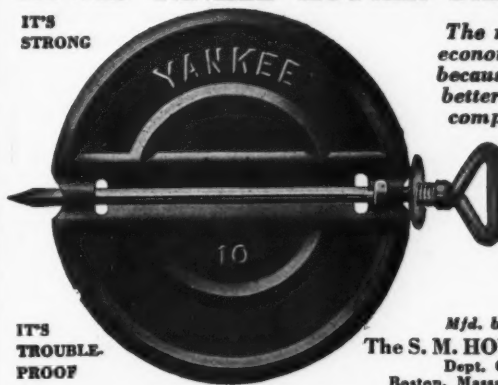
Write for details

GENERAL HEATING COMPANY
St. Paul, Minn.

HOWES YANKEE HOT-AIR DAMPER

IT'S
STRONG

The most
economical
because it's
better and
complete



IT'S
TROUBLE-
PROOF

M/d. by
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Dept. C.
Boston, Massachusetts

The Viking Shear

Compound lever handle—re-
movable blades. Upper blade
away from mechanic enabling
easy following of work—an
exclusive Viking feature.



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VIKING SHEAR CO., Erie, Pa.

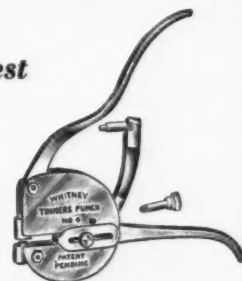
WHITNEY Lever PUNCHES

GOOD TOOLS

Are Always Cheapest

No. 4—ONE HAND
TINNER'S PUNCH

Capacity, 3/4 inch hole through 16
Gauge. Punches 1/16 inch to 9/32
inch by 1/64 inch. Punch and Die
stay in perfect alignment because side
plates carry the strain. Has adjustable
gauge to regulate holes from.



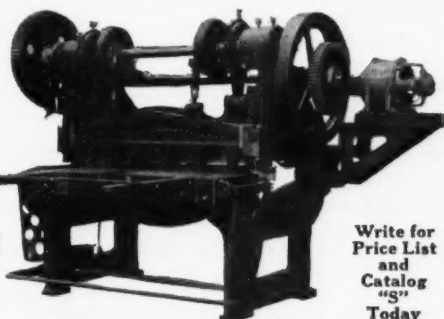
W. A. WHITNEY MFG. COMPANY
636 Race Street Rockford, Ill.

BERTSCH POWER SHEAR

BELT
OR
MOTOR
DRIVE

Takes
lightest
sheets to
Heaviest
Plates

Built in all
Standard
Sizes and
Capacities



Write for
Price List
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Catalog
"S"
Today

BERTSCH & CO., Cambridge City, Ind.

WATERBURY

SEAMLESS FURNACE

REC. U.S. PAT. OFF. PIPE OR PIPELESS

Guaranteed

Permanently Gas-Tight

The Waterman-Waterbury Co.

1128 Jackson Street N. E.
Minneapolis Minnesota

Say you saw it in AMERICAN ARTISAN—Thank you!

Alphabetical List of Advertisers

Firms represented in this issue are identified by the folio of the page on which their advertising appears. Advertising which appears in alternate issues is marked with an asterisk.

A-C Mfg. Co.....	41	Lastik Products Co., Inc.....	45
Aeolus Dickinson	45	Lennox Furnace Co.....	40
Agricola Furnace Co.....	41	Levow, David	43
American Brass Co.....	8	Liberty Foundry Co.....	37
American Foundry & Furnace Co.*.....	...	Marshalltown Mfg. Co.*.....	...
American Furnace Co.....	39	May-Fiebeger Co.*
American Machine Products Co.*.....	...	McIlvaine Burner Corp.*.....	...
American Wood Register Co.*.....	...	Meyer & Bro., F.*.....	...
Armstrong Furnace Co.*.....	...	Meyer Furnace Co.....	45
Auer Register Co.....	41	Midland Furnace Co.*.....	...
Automatic Humidifier Co.....	41	Milcor Steel Co.*.....	...
Baker Furnace Co.....	43	Minneapolis-Honeywell Reg. Co.*.....	...
Barnes Metal Prod. Co.....	51	Modern Heat Regulator Co.*.....	...
Berger Bros. Co.....	36	Motor Wheel Corp., Heater Div.*.....	...
Bertsch & Co.....	47	Mt. Vernon Furnace & Mfg. Co.....	45
Bettendorf Mfg. Co.*.....	...	National Super Service Co.....	35
Bismarck Hotel*.....	...	Newport Rolling Mill Co.....	39
Bock Oil Burner Co.*.....	...	Northern Oil Burners, Inc.*.....	...
Braden Mfg. Co.....	38	Osborn Co., The J. M. & L. A.....	40
Brauer, A. G., Supply Co.....	40	Overton, Platte	50
Breuer Electric Mfg. Co.*.....	...	Parker-Kalon Corp.*.....	...
Brillion Furnace Co.....	39	Peck, Stow & Wilcox Co.*.....	...
Brundage Co.*	Peerless Foundry Co.....	36
Burt Mfg. Co.....	43	Premier Warm Air Heater Co.....	45
Chicago Perforating Co.*.....	...	Republic Steel Corp.....	Back Cover
Christie Cleaner Co.*.....	...	Revere Copper & Brass, Inc.....	2
Connors Paint Co., Wm.....	41	Rival Strap Corp.....	43
Dail Steel Products Co.*.....	...	Robinson Co., A. H.*.....	...
Densmore & Quinlan Co.....	38	Rock Island Register Co.*.....	...
Deshler Foundry & Machine Works*.....	...	Rybolt Heater Co.....	38
Diener Mfg. Co., Geo. W.....	41	Ryerson & Son, Inc., Jos. T.....	45
Dreis & Krump Mfg. Co.....	40	Sallada Mfg. Co.....	47
Eissler Hardware	40	St. Louis Tech. Inst.....	49
Emerson Electric Mfg. Co.*.....	...	Schwab Furnace & Mfg. Co.*.....	...
Enterprise Boiler & Tank Works*.....	...	Silent Automatic Corp.....	5
Fanner Mfg. Co.....	47	Standard Asbestos Mfg. Co.*.....	...
Forest City Foundries Co.....	7	Standard Fdy. & Furn. Co.*.....	...
Gehri, A., & Co.....	37	Symonds Register Co.....	45
General Heating Co.....	47	Technical Products Co.*.....	...
Globe Iron Roofing & Corrugating Co.*.....	...	Time-O-Stat Controls, Div. Minneapolis-Honeywell Regulator Co.*.....	...
Graff Furnace Co.*.....	...	Tuttle & Bailey Mfg. Co.*.....	...
Hall-Neal Furnace Co.....	43	United States Furnace Co.....	50
Harrington & King Perf. Co.....	40	United States Register Co.*.....	...
Hart & Cooley Mfg. Co.....	37	Viking Shear Co.....	47
Henry Furn. & Fdy. Co.....	41	Waterloo Register Co.*.....	...
Howes Co., S. M.....	47	Waterman-Waterbury Co.	47
Independent Air Filter Co.*.....	...	Watt Mfg. Co.....	40
Independent Reg. & Mfg. Co.....	45	Western Steel Products Co.....	40
Inland Steel Co.*.....	...	White Mfg. Co.*.....	...
International Heater Co.....	4	Whitney Mfg. Co., W. A.....	47
International Nickel Co.....	3	Williamson Heater Co.*.....	...
Interstate Machinery Co.*.....	...	Wilson, Grant, Inc.*.....	35
Jordan & Co., Paul R.....	36	Wise Furnace Co.....	35
Kester Solder Co.*.....	...	Yoder Co., The*.....	...
Kleenaire Filter Co.....	41	Young Ventilating Co., The.....	39
Lakeside Co.*		

THE BUYERS' DIRECTORY APPEARS ON PAGES 44 AND 46

Classified Advertising

BUSINESS CHANCES

Lightning Rods—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddle Company, Marshfield, Wis.

For Sale—Buffalo Forge Angle Iron Cutter No. 2, in good condition. \$10.00 cash buys it. Address X-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—One Niagara Deep Throat Bearer No. 2, with four sets of rolls and standard. All in good condition. Will sell about 1/4 price. Address B-539, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Ill.

Man, with full set of plumbing and heating tools and a few hundred dollars to invest, wishes to get in with some good firm as manager of shop. Will take shop on percentage if desired. Can handle any job, large or small. Prefer some good town in Illinois. Best of references as to ability, etc. Address K-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Rent, with option to buy if so desired—Fully equipped sheet metal shop in good locality. Owner desires to occupy half of space for other purpose. Will rent on percentage basis. Reliable person with best references need only reply. Address L-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Heating and sheet metal shop in western North Dakota town of 5,000 population. Well equipped shop having a new 8-foot brake and all tools in good condition. A very good opening for an experienced heating man. Other interests reason for selling. Address T-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Sheet metal and plumbing shop. Good location in live Indiana town, 15,000 population. Fully equipped. Terms to responsible party. Address S-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—Best equipped general shop in northern Ohio town of 2,200. Very excellent exclusive furnace agency. Seven towns, two cities, Ordnance Depot and Army Camp within 12-mile radius. Other interests compel full attention. Address P-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

HELP WANTED

HELP WANTED

Salesmen on attractive basis wanted in several territories. Refer to page 4 for description of line which also includes radiation and steam and hot water boiler heating equipment. Address Department A-311-A, International Heater Company, 101 Park Avenue, Utica, New York. Z-538

Manufacturers' Agents

Wanted to sell our furnace cement, roofing paint and cement and calking compounds. Our consistent trade paper advertising is creating demand. Exclusive territory given with liberal commission. Address W-538, AMERICAN ARTISAN, 139 N. Clark Street, Chicago, Illinois.

HELP WANTED

WANTED

National distributor of Hardware, Implements, Plumbing, Heating, Paints, etc., with many stores, offers opportunity for permanent employment to men who have operated or been employed in Hardware Stores handling above lines.

Must be able to plan and estimate plumbing and heating jobs and also handle ALL other duties connected with the successful operation of a country Hardware Store.

Write in confidence giving all details, including age, names of former employers and past and present salary.

Address A-539
AMERICAN ARTISAN
139 N. Clark St. Chicago, Ill.

Manufacturers Representative

Desires to represent reputable manufacturers on Pacific Coast. Address C-538, AMERICAN ARTISAN, 139 N. Clark St., Chicago, Illinois.

SITUATION WANTED

Situation Wanted—By first class sheet metal worker, plumber, and furnace man with 25 years experience. Married, sober, steady and reliable. Best of references. Address F-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

Situation Wanted—A first class sheet metal worker and furnace man will give four weeks labor for Board to show his ability to handle the job. Address G-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Ill.

Situation Wanted—Who wants a first-class, all-around sheet metal worker? Can do furnace and roofing work of all kinds; draft all patterns; neat, accurate, thoroughly experienced and capable; but best proof is actual performance. Prefer shop in well established hardware. Best references. Address G. M. S., 838 Wayne Avenue, Defiance, Ohio. O-538

Situation Wanted—By a first class hardware clerk and salesman. Also good mechanic in shop if needed. Would like to make a change. If you are in need of a capable and dependable man, answer this ad. Address J-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

SITUATION WANTED

Situation Wanted—Have had 26 years experience in the sheet metal and furnace business. Can figure all sizes of work, forced air, gravity, and ventilation. Have knowledge of engineering warm air heating, layouts, pattern cutting, can make own plans, and will go anywhere. Prefer New York, Illinois or Pennsylvania. Am 41 years old, married, three children, steady and reliable. Address H-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

Situation Wanted—By first class tinner and plumber with 28 years experience. Can also do any kind of work that comes into a shop. Experienced in steel ceiling, pump and windmill work. Can furnish references. Address F. C. Blewett, Dodgeville, Wisconsin. Y-538

Situation Wanted—By first class tinner and sheet metal worker. Can do plumbing and heating and all kinds of shop work. Iowa or Illinois preferred. Address C-539, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

TOOLS AND MACHINES

Wanted—A used Lennox of Marshalltown Throatless Shear, capacity 1/4-in. steel motor driven. Also single iron former. Must be in first class condition and priced reasonable. Address E-538, AMERICAN ARTISAN, 139 North Clark Street, Chicago, Illinois.

For Sale—One used Robinson 8-foot cornice brake. Will bend 12 gauge, 8 foot long. Price, \$75.00. Address Jacob Brenner, 45-47 Third Street, Fond du Lac, Wisconsin. R-538

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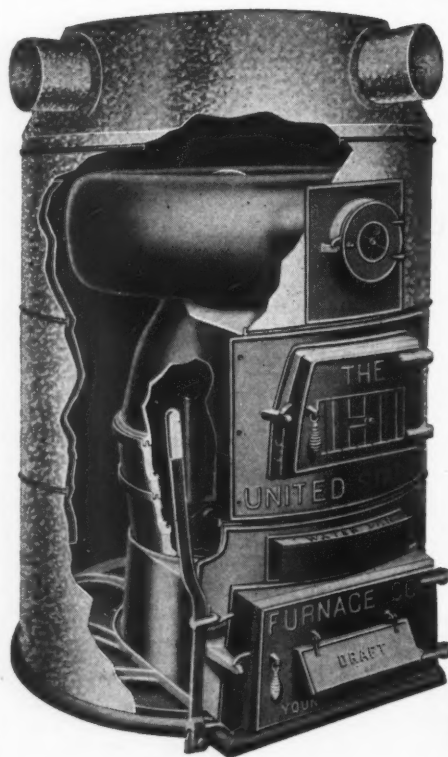
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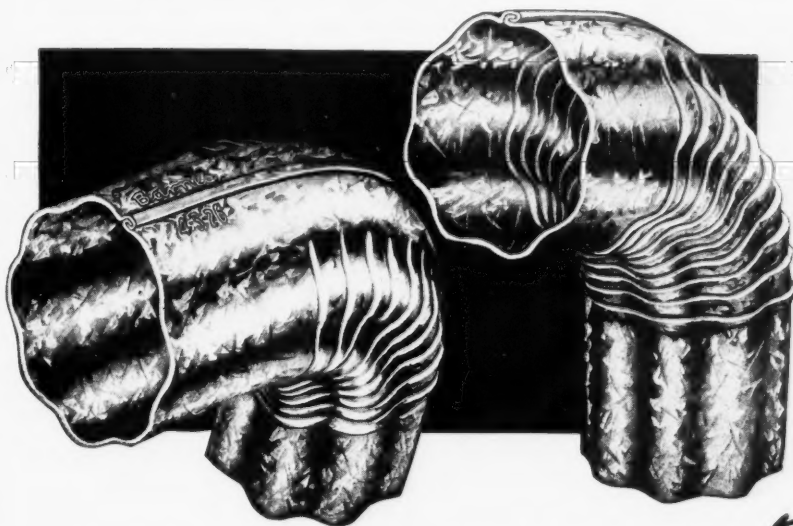
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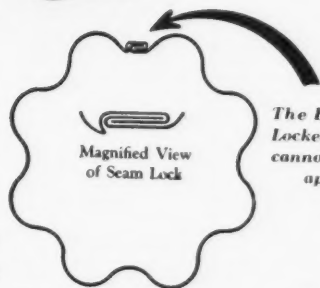
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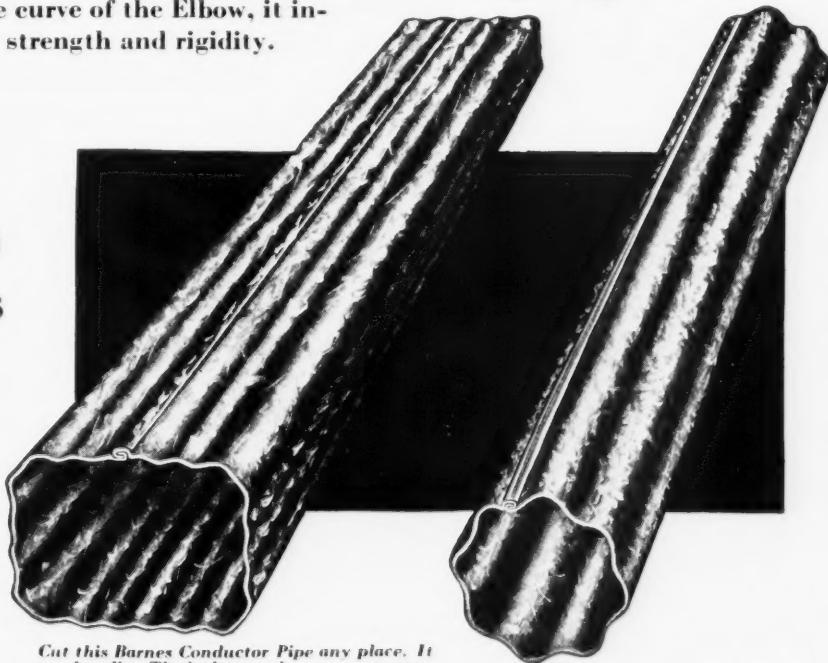
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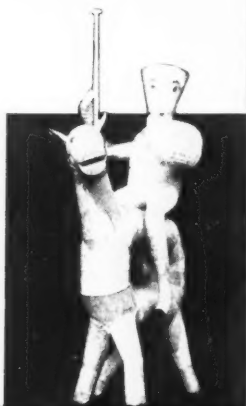
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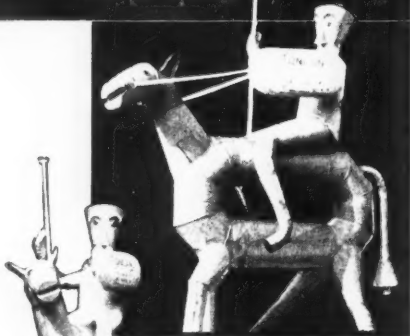
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May 4, 1931

Republic Steel Corp.,
Youngstown, Ohio.

Dear Sirs:-

I am writing this voluntarily as the only means I have of expressing the appreciation of a practical mechanic who has handled all kinds of metal for the past 38 years. You have my permission to use this as you see fit.

I have just recently started in the sheet metal business in this city and I use exclusively Toncan Iron. I have been using Toncan for years and find it very superior to any sheets I can buy, both from the standpoint of wear and ease of working. It does not flake in forming as other metals do. It is softer and more uniform in weight.

I am sending you some pictures of a float which I had in our Festival of States parade last month and one of the pictures is plain enough so it speaks Toncan for itself. I made these men so the labels Toncan were in front and in back. Also the shield they carry carries the label and believe me, I have been busy explaining what Toncan is since that time.

I have been unable to get any of the Toncan Shop signs here, so if you think I am entitled to them or anything else you have in the way of advertising, I would be very glad to help in my small way to put Toncan across.

Hoping to hear from you and trusting that you may be able in some way to get out of this what I feel in sending it to you, I remain

Very truly yours,

C. E. Brown

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Because of its long life in service, Toncan Iron builds good will. And because good will is the heart and soul of every business, this alloy of refined iron, copper and molybdenum, a development of more than twenty years, can be a mighty important factor in helping to show a consistent year-in year-out profit. Send for list of sales helps.



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